

# SEQUENCE LISTING

<110> ANDERSEN, Peter  
SKJOT, Rikke

<120> ~~NUCLEIC ACID FRAGMENTS AND POLYPEPTIDE FRAGMENTS~~  
~~DERIVED FROM M. TUBERCULOSIS~~ *Antigens*

<130> 670001-2002.4

<140> ~~09/246,191~~ *Here with*

<141> ~~1998-12-30~~

<150> ~~1997 01277/~~

<151> ~~1997-10-11~~

<150> ~~PCT/DK98/00438~~

<151> ~~1998-08-10~~

<150> ~~PCT/DK98/00132~~

<151> ~~1998-01-04~~

<150> ~~60/070,488~~

<151> ~~1998-01-05~~

<160> ~~199~~ *257*

<170> PatentIn Ver. 2.0

<210> 1

<211> 381

<212> DNA

<213> Mycobacterium tuberculosis

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atgttgggtc acgccgggga tatggccgga tatgccggca cgctgcagag cttgggtgcc 180
gagatcgccg tggagcaggc cgcgttgca agtgcgctggc agggcgatac cgggatcacg 240
tatcaggcgt ggcaggcaca gtggaaccag gccatggaag atttggtgcy ggcctatcat 300
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gccgccaaat ggggcggcta g                                     381
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<210> 2

<211> 96

<212> PRT

<213> Mycobacterium tuberculosis

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Gly Leu Asp Val Ser Asp Arg Ile Arg Val Val Met Ser Val Pro Ala  
 50 55 60

Glu Arg Glu Asp Trp Ala Arg Thr His Arg Asp Leu Ile Ala Gly Glu  
 65 70 75 80

Ile Leu Ala Thr Asp Phe Glu Phe Ala Asp Leu Ala Asp Gly Val Ala  
 85 90 95

Ile Gly Asp Gly Val Arg Val Ser Ile Glu Lys Thr  
 100 105

&lt;210&gt; 5

&lt;211&gt; 889

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium tuberculosis

&lt;400&gt; 5

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 tgagccgtcg ccattgctgaa ttccggttg aaacaacga attcaatgtc gtcgatgtcg 540  
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&lt;210&gt; 6

&lt;211&gt; 162

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium tuberculosis

&lt;400&gt; 6

Met Thr Asp Met Asn Pro Asp Ile Glu Lys Asp Gln Thr Ser Asp Glu  
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 cggcgagcag cgcacgattt cgagcgctgc tcccgaagc cgcctcgggtg gtcttggtccc 780  
 ggcggttaata caggtgcagg tcgtgctccc acgtgaaggc gatggcaccg tggatctgaa 840  
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<210> 8

<211> 165

<212> PRT

<213> Mycobacterium tuberculosis

<400> 8

Met Ala Gln Ile Thr Leu Arg Gly Asn Ala Ile Asn Thr Val Gly Glu  
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Leu Pro Ala Val Gly Ser Pro Ala Pro Ala Phe Thr Leu Thr Gly Gly  
 20 25 30

Asp Leu Gly Val Ile Ser Ser Asp Gln Phe Arg Gly Lys Ser Val Leu  
 35 40 45

Leu Asn Ile Phe Pro Ser Val Asp Thr Pro Val Cys Ala Thr Ser Val  
 50 55 60

Arg Thr Phe Asp Glu Arg Ala Ala Ala Ser Gly Ala Thr Val Leu Cys  
 65 70 75 80

Val Ser Lys Asp Leu Pro Phe Ala Gln Lys Arg Phe Cys Gly Ala Glu  
 85 90 95

Gly Thr Glu Asn Val Met Pro Ala Ser Ala Phe Arg Asp Ser Phe Gly  
 100 105 110

Glu Asp Tyr Gly Val Thr Ile Ala Asp Gly Pro Met Ala Gly Leu Leu  
 115 120 125

Ala Arg Ala Ile Val Val Ile Gly Ala Asp Gly Asn Val Ala Tyr Thr  
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Ala Ala Leu Gly Ala  
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<211> 1054

<212> DNA

<213> Mycobacterium tuberculosis

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<210> 10

<211> 217

<212> PRT

<213> Mycobacterium tuberculosis

<400> 10

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Thr Leu Ala Leu Val Ser Ala Pro Ala Gly Gly Arg Ala Ala His Ala
      20                      25                      30

Asp Pro Cys Ser Asp Ile Ala Val Val Phe Ala Arg Gly Thr His Gln
      35                      40                      45

Ala Ser Gly Leu Gly Asp Val Gly Glu Ala Phe Val Asp Ser Leu Thr
      50                      55                      60

Ser Gln Val Gly Gly Arg Ser Ile Gly Val Tyr Ala Val Asn Tyr Pro
      65                      70                      75                      80

Ala Ser Asp Asp Tyr Arg Ala Ser Ala Ser Asn Gly Ser Asp Asp Ala
      85                      90                      95

Ser Ala His Ile Gln Arg Thr Val Ala Ser Cys Pro Asn Thr Arg Ile
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100	105	110
Val Leu Gly Gly Tyr Ser Gln Gly Ala Thr Val Ile Asp Leu Ser Thr		
115	120	125
Ser Ala Met Pro Pro Ala Val Ala Asp His Val Ala Ala Val Ala Leu		
130	135	140
Phe Gly Glu Pro Ser Ser Gly Phe Ser Ser Met Leu Trp Gly Gly Gly		
145	150	155
Ser Leu Pro Thr Ile Gly Pro Leu Tyr Ser Ser Lys Thr Ile Asn Leu		
165	170	175
Cys Ala Pro Asp Asp Pro Ile Cys Thr Gly Gly Gly Asn Ile Met Ala		
180	185	190
His Val Ser Tyr Val Gln Ser Gly Met Thr Ser Gln Ala Ala Thr Phe		
195	200	205
Ala Ala Asn Arg Leu Asp His Ala Gly		
210	215	

<210> 11

<211> 949

<212> DNA

<213> Mycobacterium tuberculosis

<400> 11

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<210> 12

<211> 182

<212> PRT

<213> Mycobacterium tuberculosis

<400> 12

Met Ala Asp Cys Asp Ser Val Thr Asn Ser Pro Leu Ala Thr Ala Thr

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10

15

Ala Thr Leu His Thr Asn Arg Gly Asp Ile Lys Ile Ala Leu Phe Gly

20

25

30

Asn His Ala Pro Lys Thr Val Ala Asn Phe Val Gly Leu Ala Gln Gly

35

40

45

Thr Lys Asp Tyr Ser Thr Gln Asn Ala Ser Gly Gly Pro Ser Gly Pro

50

55

60

Phe Tyr Asp Gly Ala Val Phe His Arg Val Ile Gln Gly Phe Met Ile

65

70

75

80

Gln Gly Gly Asp Pro Thr Gly Thr Gly Arg Gly Gly Pro Gly Tyr Lys

85

90

95

Phe Ala Asp Glu Phe His Pro Glu Leu Gln Phe Asp Lys Pro Tyr Leu

100

105

110

Leu Ala Met Ala Asn Ala Gly Pro Gly Thr Asn Gly Ser Gln Phe Phe

115

120

125

Ile Thr Val Gly Lys Thr Pro His Leu Asn Arg Arg His Thr Ile Phe

130

135

140

Gly Glu Val Ile Asp Ala Glu Ser Gln Arg Val Val Glu Ala Ile Ser

145

150

155

160

Lys Thr Ala Thr Asp Gly Asn Asp Arg Pro Thr Asp Pro Val Val Ile

165

170

175

Glu Ser Ile Thr Ile Ser

180

<210> 13

<211> 1060

<212> DNA

<213> Mycobacterium tuberculosis

<400> 13

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gccccgacgc cgaagtgggtg ttcgcccgcg gccgcttcga accgcccggg attggcacgg 360
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aggcgatgca cgcaaaagtc ggcgactacc tcgtggtgaa gggcacaacc acggaacggc 1020
atgatcaaca tgctgagatc atcgaggtgc gtcgcgcaga 1060

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<210> 14

<211> 219

<212> PRT

<213> Mycobacterium tuberculosis

<400> 14

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Ile Thr Val Pro Ala Gly Tyr Pro Gly Ala Val Ala Pro Ala Thr Ala
          20                      25                      30

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Ala Cys Pro Asp Ala Glu Val Val Phe Ala Arg Gly Arg Phe Glu Pro
          35                      40                      45

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Pro Gly Ile Gly Thr Val Gly Asn Ala Phe Val Ser Ala Leu Arg Ser
          50                      55                      60

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Lys Val Asn Lys Asn Val Gly Val Tyr Ala Val Lys Tyr Pro Ala Asp
          65                      70                      75                      80

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Asn Gln Ile Asp Val Gly Ala Asn Asp Met Ser Ala His Ile Gln Ser
          85                      90                      95

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Met Ala Asn Ser Cys Pro Asn Thr Arg Leu Val Pro Gly Gly Tyr Ser
          100                      105                      110

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Leu Gly Ala Ala Val Thr Asp Val Val Leu Ala Val Pro Thr Gln Met
          115                      120                      125

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Trp Gly Phe Thr Asn Pro Leu Pro Pro Gly Ser Asp Glu His Ile Ala  
 130 135 140

Ala Val Ala Leu Phe Gly Asn Gly Ser Gln Trp Val Gly Pro Ile Thr  
 145 150 155 160

Asn Phe Ser Pro Ala Tyr Asn Asp Arg Thr Ile Glu Leu Cys His Gly  
 165 170 175

Asp Asp Pro Val Cys His Pro Ala Asp Pro Asn Thr Trp Glu Ala Asn  
 180 185 190

Trp Pro Gln His Leu Ala Gly Ala Tyr Val Ser Ser Gly Met Val Asn  
 195 200 205

Gln Ala Ala Asp Phe Val Ala Gly Lys Leu Gln  
 210 215

<210> 15

<211> 1198

<212> DNA

<213> Mycobacterium tuberculosis

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<210> 16



<211> 265

<212> PRT

<213> Mycobacterium tuberculosis

<400> 16

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20 25 30

Gly Arg Arg Val Val Asp Val Ser Asp Pro Gly Gly Pro Val Thr Ala  
35 40 45

Ala Val Ser Thr Gly Arg Leu Ile Asp Val Lys Ala Pro Thr Asn Gly  
50 55 60

Val Ile Ala His Leu Arg Ala Ser Lys Pro Leu Val Arg Leu Arg Val  
65 70 75 80

Pro Phe Thr Leu Ser Arg Asn Glu Ile Asp Asp Val Glu Arg Gly Ser  
85 90 95

Lys Asp Ser Asp Trp Glu Pro Val Lys Glu Ala Ala Lys Lys Leu Ala  
100 105 110

Phe Val Glu Asp Arg Thr Ile Phe Glu Gly Tyr Ser Ala Ala Ser Ile  
115 120 125

Glu Gly Ile Arg Ser Ala Ser Ser Asn Pro Ala Leu Thr Leu Pro Glu  
130 135 140

Asp Pro Arg Glu Ile Pro Asp Val Ile Ser Gln Ala Leu Ser Glu Leu  
145 150 155 160

Arg Leu Ala Gly Val Asp Gly Pro Tyr Ser Val Leu Leu Ser Ala Asp  
165 170 175

Val Tyr Thr Lys Val Ser Glu Thr Ser Asp His Gly Tyr Pro Ile Arg  
180 185 190

Glu His Leu Asn Arg Leu Val Asp Gly Asp Ile Ile Trp Ala Pro Ala  
195 200 205

Ile Asp Gly Ala Phe Val Leu Thr Thr Arg Gly Gly Asp Phe Asp Leu  
210 215 220

Gln Leu Gly Thr Asp Val Ala Ile Gly Tyr Ala Ser His Asp Thr Asp



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1 5 10 15

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<212> PRT

<213> Mycobacterium tuberculosis

<400> 20

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<212> PRT

<213> Mycobacterium tuberculosis

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<213> Mycobacterium tuberculosis

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<223> Ile is Ile or Val

<220>

<221> VARIANT

<222> (10)  
<223> Val is Val or Thr

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<222> (11)  
<223> Val is Val or Phe

<220>  
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<222> (14)  
<223> Asp is Asp or Gln

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<210> 23  
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<213> Mycobacterium tuberculosis

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Ala Glu Ile

<210> 24  
<211> 34  
<212> DNA  
<213> Mycobacterium tuberculosis

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<210> 25  
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<400> 25  
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<210> 26

<211> 28  
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 <213> Mycobacterium tuberculosis

<400> 26  
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<210> 41  
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 ccaactggga gcaggatggc agcaagcagt gggacacctt cttgtccgct gagctgcccg 420  
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 agggcggtta cggggcgatg gcgctggcgg ccttccaccc cgaccgcttc ggcttcgctg 540  
 gctcgatgtc gggctttttg taccgctcga acaccaccac caacggtgcg atcgcgccgg 600  
 gcatgcagca attcggcggg gtggacacca acggaatgtg gggagcacca cagctgggtc 660  
 ggtggaagtg gcacgacccg tgggtgcatg ccagcctgct ggcgcaaaac aacacccggg 720  
 tgtgggtgtg gagcccagacc aaccggggag ccagcgatcc cgccgccatg atcggccaaa 780  
 ccgccgaggc gatgggtaac agccgcatgt tctacaacca gtatcgcagc gtcggcgggc 840  
 acaacggaca cttcgacttc ccagccagcg gtgacaacgg ctggggctcg tgggcgcccc 900  
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<210> 42  
 <211> 299

<212> PRT

<213> Mycobacterium tuberculosis

<400> 42

Met Lys Gly Arg Ser Ala Leu Leu Arg Ala Leu Trp Ile Ala Ala Leu  
1 5 10 15

Ser Phe Gly Leu Gly Gly Val Ala Val Ala Ala Glu Pro Thr Ala Lys  
20 25 30

Ala Ala Pro Tyr Glu Asn Leu Met Val Pro Ser Pro Ser Met Gly Arg  
35 40 45

Asp Ile Pro Val Ala Phe Leu Ala Gly Gly Pro His Ala Val Tyr Leu  
50 55 60

Leu Asp Ala Phe Asn Ala Gly Pro Asp Val Ser Asn Trp Val Thr Ala  
65 70 75 80

Gly Asn Ala Met Asn Thr Leu Ala Gly Lys Gly Ile Ser Val Val Ala  
85 90 95

Pro Ala Gly Gly Ala Tyr Ser Met Tyr Thr Asn Trp Glu Gln Asp Gly  
100 105 110

Ser Lys Gln Trp Asp Thr Phe Leu Ser Ala Glu Leu Pro Asp Trp Leu  
115 120 125

Ala Ala Asn Arg Gly Leu Ala Pro Gly Gly His Ala Ala Val Gly Ala  
130 135 140

Ala Gln Gly Gly Tyr Gly Ala Met Ala Leu Ala Ala Phe His Pro Asp  
145 150 155 160

Arg Phe Gly Phe Ala Gly Ser Met Ser Gly Phe Leu Tyr Pro Ser Asn  
165 170 175

Thr Thr Thr Asn Gly Ala Ile Ala Ala Gly Met Gln Gln Phe Gly Gly  
180 185 190

Val Asp Thr Asn Gly Met Trp Gly Ala Pro Gln Leu Gly Arg Trp Lys  
195 200 205

Trp His Asp Pro Trp Val His Ala Ser Leu Leu Ala Gln Asn Asn Thr  
210 215 220

Arg Val Trp Val Trp Ser Pro Thr Asn Pro Gly Ala Ser Asp Pro Ala  
225 230 235 240



Ala Met Ile Gly Gln Thr Ala Glu Ala Met Gly Asn Ser Arg Met Phe  
 245 250 255

Tyr Asn Gln Tyr Arg Ser Val Gly Gly His Asn Gly His Phe Asp Phe  
 260 265 270

Pro Ala Ser Gly Asp Asn Gly Trp Gly Ser Trp Ala Pro Gln Leu Gly  
 275 280 285

Ala Met Ser Gly Asp Ile Val Gly Ala Ile Arg  
 290 295

<210> 43

<211> 27

<212> DNA

<213> Mycobacterium tuberculosis

<400> 43

gcaacacccg ggatgtcgca aatcatg

27

<210> 44

<211> 27

<212> DNA

<213> Mycobacterium tuberculosis

<400> 44

gtaacacccg gggaggccgc cgacccg

27

<210> 45

<211> 37

<212> DNA

<213> Mycobacterium tuberculosis

<400> 45

ctactaagct tggatcccta gccgccccat ttggcgg

37

<210> 46

<211> 38

<212> DNA

<213> Mycobacterium tuberculosis

<400> 46

ctactaagct tccatgggtca ggtcttttcg atgcttac

38

<210> 47

<211> 450

<212> DNA

<213> Mycobacterium tuberculosis

<400> 47

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accagcagtc agcatacggc atggccgaaa agagtggggt gatgatggcc gaggatgttc 120
gcgccgagat cgtggccagc gttctcgaag tcgttgtaa cgaaggcgat cagatcgaca 180
agggcgacgt cgtggtgctg ctggagtcga tgaagatgga gatccccgtc ctggccgaag 240
ctgccggaac ggtcagcaag gtggcgggtat cggtgggcga tgtcattcag gccggcgacc 300
ttatcgcggt gatcagctag tcgttgatag tcatcatgt ccacactcgg tgatctgctc 360
gccgaacaca cggtgctgcc gggcagcgcg gtggaccacc tgcattcggt ggtcggggag 420
tggcagctcc ttgccgactt gtcgtttgcc 450
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<210> 48

<211> 71

<212> PRT

<213> Mycobacterium tuberculosis

<400> 48

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Met Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val
  1                   5                   10                   15

Val Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu
                20                   25                   30

Leu Glu Ser Met Lys Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly
                35                   40                   45

Thr Val Ser Lys Val Ala Val Ser Val Gly Asp Val Ile Gln Ala Gly
                50                   55                   60

Asp Leu Ile Ala Val Ile Ser
  65                   70
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<210> 49

<211> 750

<212> DNA

<213> Mycobacterium tuberculosis

<400> 49

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gctagtcgaa aacgaggcta gtcgcaacgt cgatcacacg agaggactga ccatgacaac 120
ttcacccgac ccgtatgccg cgctgcccaa gctgccgtcc ttcagcctga cgtcaacctc 180
gatcaccgat gggcagccgc tggctacacc ccaggtcagc gggatcatgg gtgcggggcg 240
ggcggatgcc agtcgcgagc tgaggtggtc gggatttccc agcgagaccc gcagcttcgc 300
ggtaaccgtc tacgaccctg atgccccac cctgtccggg ttctggcact gggcgggtggc 360
caacctgcct gccaacgtca ccgagttgcc cgaggggtgc ggcgatggcc gcgaactgcc 420
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gggcggggca ctgacattgg tcaacgacgc cggatatgccc cggatatgtgg gtgcggcgccc 480  
 gcctcccggg catgggggtgc atcgctacta cgtcgcggta cacgcgggtga aggtcgaaaa 540  
 gctcgacctc cccgaggacg cgagtcctgc atatctggga ttcaacctgt tccagcacgc 600  
 gattgcacga gcggtcatct tcggcaccta cgagcagcgt tagcgcttta gctgggttgc 660  
 cgacgtcttg ccgagccgac cgcttcgtgc agcgagccga acccgccgtc atgcagcctg 720  
 cgggcaatgc cttcatggat gtccttggcc 750

<210> 50

<211> 176

<212> PRT

<213> Mycobacterium tuberculosis

<400> 50

Met Thr Thr Ser Pro Asp Pro Tyr Ala Ala Leu Pro Lys Leu Pro Ser  
 1 5 10 15

Phe Ser Leu Thr Ser Thr Ser Ile Thr Asp Gly Gln Pro Leu Ala Thr  
 20 25 30

Pro Gln Val Ser Gly Ile Met Gly Ala Gly Gly Ala Asp Ala Ser Pro  
 35 40 45

Gln Leu Arg Trp Ser Gly Phe Pro Ser Glu Thr Arg Ser Phe Ala Val  
 50 55 60

Thr Val Tyr Asp Pro Asp Ala Pro Thr Leu Ser Gly Phe Trp His Trp  
 65 70 75 80

Ala Val Ala Asn Leu Pro Ala Asn Val Thr Glu Leu Pro Glu Gly Val  
 85 90 95

Gly Asp Gly Arg Glu Leu Pro Gly Gly Ala Leu Thr Leu Val Asn Asp  
 100 105 110

Ala Gly Met Arg Arg Tyr Val Gly Ala Ala Pro Pro Pro Gly His Gly  
 115 120 125

Val His Arg Tyr Tyr Val Ala Val His Ala Val Lys Val Glu Lys Leu  
 130 135 140

Asp Leu Pro Glu Asp Ala Ser Pro Ala Tyr Leu Gly Phe Asn Leu Phe  
 145 150 155 160

Gln His Ala Ile Ala Arg Ala Val Ile Phe Gly Thr Tyr Glu Gln Arg  
 165 170 175

<210> 51  
 <211> 800  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 51  
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 gtgccgcacg ccgcctcacc agcctggtgg ccgccgcctt tgcggcggcc aactgtgtgc 120  
 ttacccccgc gctggcacca ccggcatcgg cgggctgccc ggatgccgag gtggtgttcg 180  
 cccgcggaac cggcgaacca cctggcctcg gtcgggtagg ccaagctttc gtcagttcat 240  
 tgcgccagca gaccaacaag agcatcggga catacggagt caactaccg gccaacggtg 300  
 atttcttggc cgccgctgac ggcgcgaacg acgccagcga ccacattcag cagatggcca 360  
 gcgcgtgccg ggccacgagg ttggtgctcg gcggctactc ccaggggtgc gccgtgatcg 420  
 acatcgtcac cgccgcacca ctgcccggcc tcgggttcac gcagccgttg ccgcccgcag 480  
 cggacgatca catcgccgcg atcgccctgt tcgggaatcc ctcgggccgc gctggcgggc 540  
 tgatgagcgc cctgaccctt caattcgggt ccaagaccat caacctctgc aacaacggcg 600  
 acccgatttg ttcggacggc aaccggtggc gagcgcacct aggctacgtg cccgggatga 660  
 ccaaccaggc ggcgcgtttc gtcgcgagca ggatctaacg cgagccgccc catagattcc 720  
 ggctaagcaa cggctgcgcc gccgcccggc cacgagtgcg cgccgcccgc tggcacaccg 780  
 cttaccacgg ctttatgctg 800

<210> 52  
 <211> 226  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 52  
 Met Ile Pro Arg Pro Gln Pro His Ser Gly Arg Trp Arg Ala Gly Ala  
 1 5 10 15  
 Ala Arg Arg Leu Thr Ser Leu Val Ala Ala Ala Phe Ala Ala Ala Thr  
 20 25 30  
 Leu Leu Leu Thr Pro Ala Leu Ala Pro Pro Ala Ser Ala Gly Cys Pro  
 35 40 45  
 Asp Ala Glu Val Val Phe Ala Arg Gly Thr Gly Glu Pro Pro Gly Leu  
 50 55 60  
 Gly Arg Val Gly Gln Ala Phe Val Ser Ser Leu Arg Gln Gln Thr Asn  
 65 70 75 80  
 Lys Ser Ile Gly Thr Tyr Gly Val Asn Tyr Pro Ala Asn Gly Asp Phe  
 85 90 95  
 Leu Ala Ala Ala Asp Gly Ala Asn Asp Ala Ser Asp His Ile Gln Gln

100	105	110
Met Ala Ser Ala Cys Arg Ala Thr Arg Leu Val Leu Gly Gly Tyr Ser		
115	120	125
Gln Gly Ala Ala Val Ile Asp Ile Val Thr Ala Ala Pro Leu Pro Gly		
130	135	140
Leu Gly Phe Thr Gln Pro Leu Pro Pro Ala Ala Asp Asp His Ile Ala		
145	150	155
Ala Ile Ala Leu Phe Gly Asn Pro Ser Gly Arg Ala Gly Gly Leu Met		
165	170	175
Ser Ala Leu Thr Pro Gln Phe Gly Ser Lys Thr Ile Asn Leu Cys Asn		
180	185	190
Asn Gly Asp Pro Ile Cys Ser Asp Gly Asn Arg Trp Arg Ala His Leu		
195	200	205
Gly Tyr Val Pro Gly Met Thr Asn Gln Ala Ala Arg Phe Val Ala Ser		
210	215	220
Arg Ile		
225		

<210> 53  
 <211> 700  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 53  
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 aatctgcatt ttatgacaga atacgaaggg cctaagacaa aattccacgc gttaatgcag 120  
 gaacagattc ataacgaatt cacagcggca caacaatatg tcgcgatcgc ggtttatttc 180  
 gacagcgaag acctgccgca gttggcgaag cattttttaca gccaaagcggg cgaggaacga 240  
 aaccatgcaa tgatgctcgt gcaacacctg ctcgaccgcg accttcgtgt cgaaattccc 300  
 ggcgtagaca cgggtgcgaaa ccagttcgac agaccccgcg aggcactggc gctggcgctc 360  
 gatcaggaac gcacagtcac cgaccaggtc ggtcggetga cagcgggtggc ccgcgacgag 420  
 ggcgatttcc tcggcgagca gttcatgcag tggttcttgc aggaacagat cgaagaggtg 480  
 gccttgatgg caaccctggt gcggttgcc gatcgggccg gggccaacct gttcgagcta 540  
 gagaacttcg tcgcacgtga agtggatgtg gcgccggccg catcaggcgc cccgcacgct 600  
 gccggggggc gcctctagat cctggcggg gatcagcgag tgggtcccgtt cgcccccccg 660  
 tcttcacagcc aggccttggt gcggccgggg tggtagagtac 700

<210> 54  
 <211> 181

<212> PRT

<213> Mycobacterium tuberculosis

<400> 54

Met Thr Glu Tyr Glu Gly Pro Lys Thr Lys Phe His Ala Leu Met Gln  
1 5 10 15

Glu Gln Ile His Asn Glu Phe Thr Ala Ala Gln Gln Tyr Val Ala Ile  
20 25 30

Ala Val Tyr Phe Asp Ser Glu Asp Leu Pro Gln Leu Ala Lys His Phe  
35 40 45

Tyr Ser Gln Ala Val Glu Glu Arg Asn His Ala Met Met Leu Val Gln  
50 55 60

His Leu Leu Asp Arg Asp Leu Arg Val Glu Ile Pro Gly Val Asp Thr  
65 70 75 80

Val Arg Asn Gln Phe Asp Arg Pro Arg Glu Ala Leu Ala Leu Ala Leu  
85 90 95

Asp Gln Glu Arg Thr Val Thr Asp Gln Val Gly Arg Leu Thr Ala Val  
100 105 110

Ala Arg Asp Glu Gly Asp Phe Leu Gly Glu Gln Phe Met Gln Trp Phe  
115 120 125

Leu Gln Glu Gln Ile Glu Glu Val Ala Leu Met Ala Thr Leu Val Arg  
130 135 140

Val Ala Asp Arg Ala Gly Ala Asn Leu Phe Glu Leu Glu Asn Phe Val  
145 150 155 160

Ala Arg Glu Val Asp Val Ala Pro Ala Ala Ser Gly Ala Pro His Ala  
165 170 175

Ala Gly Gly Arg Leu  
180

<210> 55

<211> 950

<212> DNA

<213> Mycobacterium tuberculosis

<400> 55

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gacgcatgtt cttcacggtc tatccacagc taccgacatt tgctccggct ggatcgcggg 120  
taaaattccg tcgtgaacaa tcgacccatc cgcttctga catccggcag ggctgggttg 180  
ggcgcgggcg cattgatac cgcggtcgtc ctgtcatcg ccttgggcgc tgtttggacc 240  
ccggttgctt tcgccgatgg atgcccggac gccgaagtca cgttcgcccg cggcaccggc 300  
gagccgcccg gaatcggggc cgttgggccag gcgttcgtcg actcgctgcg ccagcagact 360  
ggcatggaga tcggagtata cccgggtgaat tacgccgcca gccgcctaca gctgcacggg 420  
ggagacggcg ccaacgacgc catatcgcac attaatgcca tggcctcgtc atgcccgaac 480  
accaagctgg tcttggggcg ctattcgagc ggcgcaaccg tgatcgatat cgtggccggg 540  
gttccgttgg gcagcatcag ctttggcagt ccgctacctg cggcatacgc agacaacgtc 600  
gcagcggctc cgggtcttcg caatccgtcc aaccgcgccg gcggatcgct gtcgagcctg 660  
agcccgttat tcggttccaa ggcgattgac ctgtgcaatc ccaccgatcc gatctgccat 720  
gtgggccccg gcaacgaatt cagcggacac atcgacggct acataccac ctacaccacc 780  
caggcggtta gtttcgtcgt gcagaggctc cgcgccgggt cggtgccaca tctgcttgga 840  
tccgtccgcg agctgcccgg gtctgtcctt cagatgcccg gcaactgcgc accggctccc 900  
gaatcgctgc acggtoctg acgctttgtc agtaagccca taaaatcgcg 950

<210> 56

<211> 262

<212> PRT

<213> Mycobacterium tuberculosis

<400> 56

Met Asn Asn Arg Pro Ile Arg Leu Leu Thr Ser Gly Arg Ala Gly Leu  
1 5 10 15

Gly Ala Gly Ala Leu Ile Thr Ala Val Val Leu Leu Ile Ala Leu Gly  
20 25 30

Ala Val Trp Thr Pro Val Ala Phe Ala Asp Gly Cys Pro Asp Ala Glu  
35 40 45

Val Thr Phe Ala Arg Gly Thr Gly Glu Pro Pro Gly Ile Gly Arg Val  
50 55 60

Gly Gln Ala Phe Val Asp Ser Leu Arg Gln Gln Thr Gly Met Glu Ile  
65 70 75 80

Gly Val Tyr Pro Val Asn Tyr Ala Ala Ser Arg Leu Gln Leu His Gly  
85 90 95

Gly Asp Gly Ala Asn Asp Ala Ile Ser His Ile Lys Ser Met Ala Ser  
100 105 110

Ser Cys Pro Asn Thr Lys Leu Val Leu Gly Gly Tyr Ser Gln Gly Ala  
115 120 125

Thr Val Ile Asp Ile Val Ala Gly Val Pro Leu Gly Ser Ile Ser Phe  
130 135 140

Gly Ser Pro Leu Pro Ala Ala Tyr Ala Asp Asn Val Ala Ala Val Ala  
145 150 155 160

Val Phe Gly Asn Pro Ser Asn Arg Ala Gly Gly Ser Leu Ser Ser Leu  
165 170 175

Ser Pro Leu Phe Gly Ser Lys Ala Ile Asp Leu Cys Asn Pro Thr Asp  
180 185 190

Pro Ile Cys His Val Gly Pro Gly Asn Glu Phe Ser Gly His Ile Asp  
195 200 205

Gly Tyr Ile Pro Thr Tyr Thr Thr Gln Ala Ala Ser Phe Val Val Gln  
210 215 220

Arg Leu Arg Ala Gly Ser Val Pro His Leu Pro Gly Ser Val Pro Gln  
225 230 235 240

Leu Pro Gly Ser Val Leu Gln Met Pro Gly Thr Ala Ala Pro Ala Pro  
245 250 255

Glu Ser Leu His Gly Arg  
260

<210> 57

<211> 1000

<212> DNA

<213> Mycobacterium tuberculosis

<400> 57

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tccattaatt cactctctgg aacaccgct gtagacctat cttctttcac tgacttcctg 180  
cgccgccagg cgccggagtt gctgccggca agcatcagcg gcggtgcgcc actcgcaggc 240  
ggcgatgcgc aactgccgca cggcaccacc attgtcgcgc tgaaataccc cggcgggtgtt 300  
gtcatggcgg gtgaccggcg ttcgacgcag ggcaacatga tttctgggcg tgatgtgcgc 360  
aaggtgtata tcaccgatga ctacaccgct accggcatcg ctggcacggc tgcggtcgcg 420  
gttgagtgtt cccggtgtga tgccgtggaa cttgagcaact acgagaagct cgagggtgtg 480  
ccgctgacgt ttgccggcaa aatcaaccgg ctggcgatta tgggtgcgtgg caatctggcg 540  
gccgcgatgc aggggtctgct ggcgttgccg ttgctggcgg gctacgacat tcatgcgtct 600  
gaccgcgaga gcgcgggtcg tategtttcg ttcgacgccg ccggcggttg gaacatcgag 660  
gaagagggct atcaggcggt gggctcgggt tcgctgttcg cgaagtcgtc gatgaagaag 720  
ttgtattcgc aggttaccga cgggtgattcg gggctgcggg tggcggtcga ggcgctctac 780  
gacgccgccg acgacgactc cgccaccggc ggtccggacc tgggtgcggg catctttccg 840  
acggcggtga tcatcgacgc cgacggggcg gttgacgtgc cggagagccg gattgccgaa 900  
ttggccccgc cgatcatcga aagccgttcg ggtgcggata ctttcggctc cgatggcggt 960



gagaagtgtat ttttccgtat ttcattctcgc ctgagcaggc

1000

<210> 58

<211> 291

<212> PRT

<213> Mycobacterium tuberculosis

<400> 58

Met Thr Trp Pro Leu Pro Asp Arg Leu Ser Ile Asn Ser Leu Ser Gly  
1 5 10 15

Thr Pro Ala Val Asp Leu Ser Ser Phe Thr Asp Phe Leu Arg Arg Gln  
20 25 30

Ala Pro Glu Leu Leu Pro Ala Ser Ile Ser Gly Gly Ala Pro Leu Ala  
35 40 45

Gly Gly Asp Ala Gln Leu Pro His Gly Thr Thr Ile Val Ala Leu Lys  
50 55 60

Tyr Pro Gly Gly Val Val Met Ala Gly Asp Arg Arg Ser Thr Gln Gly  
65 70 75 80

Asn Met Ile Ser Gly Arg Asp Val Arg Lys Val Tyr Ile Thr Asp Asp  
85 90 95

Tyr Thr Ala Thr Gly Ile Ala Gly Thr Ala Ala Val Ala Val Glu Phe  
100 105 110

Ala Arg Leu Tyr Ala Val Glu Leu Glu His Tyr Glu Lys Leu Glu Gly  
115 120 125

Val Pro Leu Thr Phe Ala Gly Lys Ile Asn Arg Leu Ala Ile Met Val  
130 135 140

Arg Gly Asn Leu Ala Ala Ala Met Gln Gly Leu Leu Ala Leu Pro Leu  
145 150 155 160

Leu Ala Gly Tyr Asp Ile His Ala Ser Asp Pro Gln Ser Ala Gly Arg  
165 170 175

Ile Val Ser Phe Asp Ala Ala Gly Gly Trp Asn Ile Glu Glu Glu Gly  
180 185 190

Tyr Gln Ala Val Gly Ser Gly Ser Leu Phe Ala Lys Ser Ser Met Lys  
195 200 205

Lys Leu Tyr Ser Gln Val Thr Asp Gly Asp Ser Gly Leu Arg Val Ala

210	215	220
Val Glu Ala Leu Tyr Asp	Ala Ala Asp Asp Asp	Ser Ala Thr Gly Gly
225	230	235 240
Pro Asp Leu Val Arg Gly Ile Phe	Pro Thr Ala Val Ile Ile	Asp Ala
	245	250 255
Asp Gly Ala Val Asp Val Pro Glu Ser Arg	Ile Ala Glu Leu Ala Arg	
	260	265 270
Ala Ile Ile Glu Ser Arg Ser Gly Ala Asp Thr Phe	Gly Ser Asp Gly	
	275	280 285
Gly Glu Lys		
290		

<210> 59  
 <211> 900  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 59  
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 tccagttcgc cgacacccgc ggttacgcct atgaccgtcg tgacgtcacg ggtcggcagt 360  
 tggccaatgt ctacgcgcag actctaggca ccattctcac cgaacaggcc aagccctacg 420  
 aggttgagtt gtgtgtggcc gaggtggcgc attacggcga gacgaaacgc cctgagttgt 480  
 atcgatttac ctacgacggg tcgatcgccg acgagccgca tttcgtggtg atgggcggca 540  
 ccacggagcc gatcgccaac gcgctcaaag agtcgtatgc cgagaacgcc agcctgaccg 600  
 acgccctgcg taccgcggtc gctgcattgc gggccggcag tgccgacacc tcgggtggtg 660  
 atcaaccac ccttggcgtg gccagcttag aggtggcgt tctcgatgcc aaccggccac 720  
 ggcgcgcgtt ccggcgcatc accggctccg ccctgcaagc gttgctggta gaccaggaaa 780  
 gccgcagtc tgacggcgaa tcgtcgggct gaggccgaaa gtccgacgcg tgtctgggac 840  
 cccgctgcga cgttaactgc gcctaaccgc ggctcgacgc gtcgccggcc gtctgactt 900

<210> 60  
 <211> 248  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 60  
 Met Ser Phe Pro Tyr Phe Ile Ser Pro Glu Gln Ala Met Arg Glu Arg  
 1 5 10 15

Ser Glu Leu Ala Arg Lys Gly Ile Ala Arg Ala Lys Ser Val Val Ala  
 20 25 30  
 Leu Ala Tyr Ala Gly Gly Val Leu Phe Val Ala Glu Asn Pro Ser Arg  
 35 40 45  
 Ser Leu Gln Lys Ile Ser Glu Leu Tyr Asp Arg Val Gly Phe Ala Ala  
 50 55 60  
 Ala Gly Lys Phe Asn Glu Phe Asp Asn Leu Arg Arg Gly Gly Ile Gln  
 65 70 75 80  
 Phe Ala Asp Thr Arg Gly Tyr Ala Tyr Asp Arg Arg Asp Val Thr Gly  
 85 90 95  
 Arg Gln Leu Ala Asn Val Tyr Ala Gln Thr Leu Gly Thr Ile Phe Thr  
 100 105 110  
 Glu Gln Ala Lys Pro Tyr Glu Val Glu Leu Cys Val Ala Glu Val Ala  
 115 120 125  
 His Tyr Gly Glu Thr Lys Arg Pro Glu Leu Tyr Arg Ile Thr Tyr Asp  
 130 135 140  
 Gly Ser Ile Ala Asp Glu Pro His Phe Val Val Met Gly Gly Thr Thr  
 145 150 155 160  
 Glu Pro Ile Ala Asn Ala Leu Lys Glu Ser Tyr Ala Glu Asn Ala Ser  
 165 170 175  
 Leu Thr Asp Ala Leu Arg Ile Ala Val Ala Ala Leu Arg Ala Gly Ser  
 180 185 190  
 Ala Asp Thr Ser Gly Gly Asp Gln Pro Thr Leu Gly Val Ala Ser Leu  
 195 200 205  
 Glu Val Ala Val Leu Asp Ala Asn Arg Pro Arg Arg Ala Phe Arg Arg  
 210 215 220  
 Ile Thr Gly Ser Ala Leu Gln Ala Leu Leu Val Asp Gln Glu Ser Pro  
 225 230 235 240  
 Gln Ser Asp Gly Glu Ser Ser Gly  
 245

<210> 61

<211> 1560

<212> DNA

<213> Mycobacterium tuberculosis

<400> 61

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tcaggccgac gagcactcga ccattagggg aggggcccgtg acccactatg acgtcgtcgt 120
tctcggagcc ggtcccggcg ggtatgtcgc ggcgattcgc gccgcacagc tcggcctgag 180
cactgcaatc gtcgaaccca agtactgggg cggagtatgc ctcaatgtcg gctgtatccc 240
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atattggcatc agcggcgagg tgaccttcga ctacggcatc gcctatgacc gcagccgaaa 360
ggtagccgag ggcaggggtg ccggtgtgca cttcctgatg aagaagaaca agatcaccga 420
gatccacggg tacggcacat ttgccgacgc caacacgttg ttggttgatc tcaacgacgg 480
cggtagcaga tcggtcacgt tcgacaacgc catcatcgcg accggcagta gcacccgggt 540
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agagctgccg aaatcgatca ttattgccgg agctgggtgcc attggcatgg agttcggcta 660
cgtgctgaag aactacggcg ttgacgtgac catcgtggaa ttccttcgcg gggcgctgcc 720
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cgaaaccatt gccggtgcag agactttgac gctgggcgac catcggatgt tgccgcgcgc 1140
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<210> 62

<211> 464

<212> PRT

<213> Mycobacterium tuberculosis

<400> 62

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Met Thr His Tyr Asp Val Val Val Leu Gly Ala Gly Pro Gly Gly Tyr
  1              5              10              15

Val Ala Ala Ile Arg Ala Ala Gln Leu Gly Leu Ser Thr Ala Ile Val
      20              25              30

Glu Pro Lys Tyr Trp Gly Gly Val Cys Leu Asn Val Gly Cys Ile Pro
      35              40              45

Ser Lys Ala Leu Leu Arg Asn Ala Glu Leu Val His Ile Phe Thr Lys
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50	55	60
Asp Ala Lys Ala Phe Gly Ile Ser Gly Glu Val Thr Phe Asp Tyr Gly		
65	70	75 80
Ile Ala Tyr Asp Arg Ser Arg Lys Val Ala Glu Gly Arg Val Ala Gly		
	85	90 95
Val His Phe Leu Met Lys Lys Asn Lys Ile Thr Glu Ile His Gly Tyr		
	100	105 110
Gly Thr Phe Ala Asp Ala Asn Thr Leu Leu Val Asp Leu Asn Asp Gly		
	115	120 125
Gly Thr Glu Ser Val Thr Phe Asp Asn Ala Ile Ile Ala Thr Gly Ser		
	130	135 140
Ser Thr Arg Leu Val Pro Gly Thr Ser Leu Ser Ala Asn Val Val Thr		
	145	150 155 160
Tyr Glu Glu Gln Ile Leu Ser Arg Glu Leu Pro Lys Ser Ile Ile Ile		
	165	170 175
Ala Gly Ala Gly Ala Ile Gly Met Glu Phe Gly Tyr Val Leu Lys Asn		
	180	185 190
Tyr Gly Val Asp Val Thr Ile Val Glu Phe Leu Pro Arg Ala Leu Pro		
	195	200 205
Asn Glu Asp Ala Asp Val Ser Lys Glu Ile Glu Lys Gln Phe Lys Lys		
	210	215 220
Leu Gly Val Thr Ile Leu Thr Ala Thr Lys Val Glu Ser Ile Ala Asp		
	225	230 235 240
Gly Gly Ser Gln Val Thr Val Thr Val Thr Lys Asp Gly Val Ala Gln		
	245	250 255
Glu Leu Lys Ala Glu Lys Val Leu Gln Ala Ile Gly Phe Ala Pro Asn		
	260	265 270
Val Glu Gly Tyr Gly Leu Asp Lys Ala Gly Val Ala Leu Thr Asp Arg		
	275	280 285
Lys Ala Ile Gly Val Asp Asp Tyr Met Arg Thr Asn Val Gly His Ile		
	290	295 300
Tyr Ala Ile Gly Asp Val Asn Gly Leu Leu Gln Leu Ala His Val Ala		

305	310	315	320
Glu Ala Gln Gly Val Val Ala Ala Glu Thr Ile Ala Gly Ala Glu Thr			
325	330	335	
Leu Thr Leu Gly Asp His Arg Met Leu Pro Arg Ala Thr Phe Cys Gln			
340	345	350	
Pro Asn Val Ala Ser Phe Gly Leu Thr Glu Gln Gln Ala Arg Asn Glu			
355	360	365	
Gly Tyr Asp Val Val Val Ala Lys Phe Pro Phe Thr Ala Asn Ala Lys			
370	375	380	
Ala His Gly Val Gly Asp Pro Ser Gly Phe Val Lys Leu Val Ala Asp			
385	390	395	400
Ala Lys His Gly Glu Leu Leu Gly Gly His Leu Val Gly His Asp Val			
405	410	415	
Ala Glu Leu Leu Pro Glu Leu Thr Leu Ala Gln Arg Trp Asp Leu Thr			
420	425	430	
Ala Ser Glu Leu Ala Arg Asn Val His Thr His Pro Thr Met Ser Glu			
435	440	445	
Ala Leu Gln Glu Cys Phe His Gly Leu Val Gly His Met Ile Asn Phe			
450	455	460	

<210> 63

<211> 550

<212> DNA

<213> Mycobacterium tuberculosis

<400> 63

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ggcccggtc ggcggcgccc tgcaggaaaa gaaggcctgc ccaggcccag actcagccga 60
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cgaactgctg gacgcgttca aggaaatgac cctgttgagg ctctccgact tcgtcaagaa 180
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cgccccggcc ggtgcccgcg tcgaggctgc cgaggagcag tccgagttcg acgtgatcct 300
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ggtcgccaag gagggcgccg acgaggccaa ggccaagctg gagggcgccg gcgccaccgt 480
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tgcgcccgcgt

550

<210> 64

<211> 130

<212> PRT

<213> Mycobacterium tuberculosis

<400> 64

Met Ala Lys Leu Ser Thr Asp Glu Leu Leu Asp Ala Phe Lys Glu Met  
1 5 10 15

Thr Leu Leu Glu Leu Ser Asp Phe Val Lys Lys Phe Glu Glu Thr Phe  
20 25 30

Glu Val Thr Ala Ala Ala Pro Val Ala Val Ala Ala Ala Gly Ala Ala  
35 40 45

Pro Ala Gly Ala Ala Val Glu Ala Ala Glu Glu Gln Ser Glu Phe Asp  
50 55 60

Val Ile Leu Glu Ala Ala Gly Asp Lys Lys Ile Gly Val Ile Lys Val  
65 70 75 80

Val Arg Glu Ile Val Ser Gly Leu Gly Leu Lys Glu Ala Lys Asp Leu  
85 90 95

Val Asp Gly Ala Pro Lys Pro Leu Leu Glu Lys Val Ala Lys Glu Ala  
100 105 110

Ala Asp Glu Ala Lys Ala Lys Leu Glu Ala Ala Gly Ala Thr Val Thr  
115 120 125

Val Lys  
130

<210> 65

<211> 900

<212> DNA

<213> Mycobacterium tuberculosis

<400> 65

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ccgattcaga cgggaatttc ggtaatccgc tgggggtgat caacgccagc aaggtcgaac 180  
accgcgacag gcagcagctg gcagcccaat cgggctacag cgaaaccata ttcgtcgatc 240  
ttcccagccc cggtcaacc accgcacag ccaccatcca tactccccgc accgaaattc 300  
cgttcgccgg acaccgcacc gtgggagcgt cctgggtggct gcgcgagagg gggacgccaa 360

ttaacacgct gcaggtgccg gccggcatcg tccaggtgag ctaccacggt gatctcaccg 420  
 ccatcagcgc ccgctcggaa tgggcacccg agttcgccat ccacgacctg gattcacttg 480  
 atgcgcttgc cgcgcgcgac cccgccgact ttccggacga catcgcgcac tacctctgga 540  
 cctggaccga ccgctccgct ggctcgctgc gcgcccgcg gtttgccgcc aacttgggcg 600  
 tcaccgaaga cgaagcgacc ggtgccgcgg ccatccggat taccgattac ctcagccgtg 660  
 acctcaccat caccagggc aaaggatcgt tgatccacac cacctggagt cccgagggct 720  
 gggttcgggt agccggccga gttgtcagcg acggtgtggc acaactcgac tgacgtagag 780  
 ctcagcgctg ccgatgcaac acggcggcaa ggtgatcctg caggggttgc ccgaccgcgc 840  
 gcactctgcaa cgagtacgaa agctcgctgc cgtcgatgcg gtaggaacgg tcaagggcgg 900

<210> 66

<211> 228

<212> PRT

<213> Mycobacterium tuberculosis

<400> 66

Met Ala Ile Glu Val Ser Val Leu Arg Val Phe Thr Asp Ser Asp Gly  
 1 5 10 15

Asn Phe Gly Asn Pro Leu Gly Val Ile Asn Ala Ser Lys Val Glu His  
 20 25 30

Arg Asp Arg Gln Gln Leu Ala Ala Gln Ser Gly Tyr Ser Glu Thr Ile  
 35 40 45

Phe Val Asp Leu Pro Ser Pro Gly Ser Thr Thr Ala His Ala Thr Ile  
 50 55 60

His Thr Pro Arg Thr Glu Ile Pro Phe Ala Gly His Pro Thr Val Gly  
 65 70 75 80

Ala Ser Trp Trp Leu Arg Glu Arg Gly Thr Pro Ile Asn Thr Leu Gln  
 85 90 95

Val Pro Ala Gly Ile Val Gln Val Ser Tyr His Gly Asp Leu Thr Ala  
 100 105 110

Ile Ser Ala Arg Ser Glu Trp Ala Pro Glu Phe Ala Ile His Asp Leu  
 115 120 125

Asp Ser Leu Asp Ala Leu Ala Ala Asp Pro Ala Asp Phe Pro Asp  
 130 135 140

Asp Ile Ala His Tyr Leu Trp Thr Trp Thr Asp Arg Ser Ala Gly Ser  
 145 150 155 160

Leu Arg Ala Arg Met Phe Ala Ala Asn Leu Gly Val Thr Glu Asp Glu  
 165 170 175



Ala Thr Gly Ala Ala Ala Ile Arg Ile Thr Asp Tyr Leu Ser Arg Asp  
180 185 190

Leu Thr Ile Thr Gln Gly Lys Gly Ser Leu Ile His Thr Thr Trp Ser  
195 200 205

Pro Glu Gly Trp Val Arg Val Ala Gly Arg Val Val Ser Asp Gly Val  
210 215 220

Ala Gln Leu Asp  
225

<210> 67

<211> 500

<212> DNA

<213> Mycobacterium tuberculosis

<400> 67

gtttgtggtg tcggtggtct gggggggcgcc aactgggatt cggttggggt ggggtgcaggt 60  
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ggcatggggg gtgtgggtgg tttgggtggg gccggttcgg gtccggcgat gggcatgggg 180  
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cgctccgaca ggtcgtcgga cgtcgggggc ggagtctggc cgttgggctt cggtaggttt 360  
gccgatgcgg gcgccggcgg aaacgaagca ctggggtcga agaacggctg cgctgccata 420  
tcgtccggag cttccatacc ttcgtgcggc cggaagagct tgcgtagtc ggccgccatg 480  
acaacctctc agagtgcgct 500

<210> 68

<211> 139

<212> PRT

<213> Mycobacterium tuberculosis

<400> 68

Met Gly Ala Gly Pro Ala Met Gly Ile Gly Gly Val Gly Gly Leu Gly  
1 5 10 15

Gly Ala Gly Ser Gly Pro Ala Met Gly Met Gly Gly Val Gly Gly Leu  
20 25 30

Gly Gly Ala Gly Ser Gly Pro Ala Met Gly Met Gly Gly Val Gly Gly  
35 40 45

Leu Asp Ala Ala Gly Ser Gly Glu Gly Gly Ser Pro Ala Ala Ile Gly  
50 55 60

Ile Gly Val Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
65 70 75 80

Ala Asp Thr Asn Arg Ser Asp Arg Ser Ser Asp Val Gly Gly Gly Val  
85 90 95

Trp Pro Leu Gly Phe Gly Arg Phe Ala Asp Ala Gly Ala Gly Gly Asn  
100 105 110

Glu Ala Leu Gly Ser Lys Asn Gly Cys Ala Ala Ile Ser Ser Gly Ala  
115 120 125

Ser Ile Pro Ser Cys Gly Arg Lys Ser Leu Ser  
130 135

<210> 69

<211> 2050

<212> DNA

<213> Mycobacterium tuberculosis

<400> 69

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ccgccggcgc ccgcacgcgc aaacctaccg aagcccaacg gccagactcc gcccccgacg 180
tccgacgacc tgteggagcg gttegtgtcg gcccgcgcgc cgccaccccc acccccacct 240
ccgcctccgc caactccgat gccgatcgcc gcaggagagc cgccctcgcc ggaaccggcc 300
gcatctaaac caccacaccc ccccatgccc atcgccggac ccgaaccggc cccacccaaa 360
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cctccgatgc ccatcgccgg acctgcacc accccaaccg aatcccagtt ggcgcccccc 480
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ccaccgacc ggctgcccc ccaactacc cgacgtgcgc gccggggtca ccgtatcgcc 720
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cgggcagagg aagcatccgg cgcgcagctc gcccccgaa cggagccctc gccagcgccg 840
ttgggccaac cgagatcgta tctggctccg cccaccgcc cgcgcgcgac agaacctccc 900
cccagccctt cgcgcgagcg caactccggt cggcgtgccg agcgcgcgct ccaccccgat 960
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gtcaatgcgg tcaatctgga agtctgccg gcaccggaat acagctcggc gcagcgcgcg 1560

```

Ser His Gly Pro His Gln Pro Arg Arg Thr Ala Pro Ala Pro Pro Trp  
 180 185 190

Ala Lys Met Pro Ile Gly Glu Pro Pro Pro Ala Pro Ser Arg Pro Ser  
 195 200 205

Ala Ser Pro Ala Glu Pro Pro Thr Arg Pro Ala Pro Gln His Ser Arg  
 210 215 220

Arg Ala Arg Arg Gly His Arg Tyr Arg Thr Asp Thr Glu Arg Asn Val  
 225 230 235 240

Gly Lys Val Ala Thr Gly Pro Ser Ile Gln Ala Arg Leu Arg Ala Glu  
 245 250 255

Glu Ala Ser Gly Ala Gln Leu Ala Pro Gly Thr Glu Pro Ser Pro Ala  
 260 265 270

Pro Leu Gly Gln Pro Arg Ser Tyr Leu Ala Pro Pro Thr Arg Pro Ala  
 275 280 285

Pro Thr Glu Pro Pro Pro Ser Pro Ser Pro Gln Arg Asn Ser Gly Arg  
 290 295 300

Arg Ala Glu Arg Arg Val His Pro Asp Leu Ala Ala Gln His Ala Ala  
 305 310 315 320

Ala Gln Pro Asp Ser Ile Thr Ala Ala Thr Thr Gly Gly Arg Arg Arg  
 325 330 335

Lys Arg Ala Ala Pro Asp Leu Asp Ala Thr Gln Lys Ser Leu Arg Pro  
 340 345 350

Ala Ala Lys Gly Pro Lys Val Lys Lys Val Lys Pro Gln Lys Pro Lys  
 355 360 365

Ala Thr Lys Pro Pro Lys Val Val Ser Gln Arg Gly Trp Arg His Trp  
 370 375 380

Val His Ala Leu Thr Arg Ile Asn Leu Gly Leu Ser Pro Asp Glu Lys  
 385 390 395 400

Tyr Glu Leu Asp Leu His Ala Arg Val Arg Arg Asn Pro Arg Gly Ser  
 405 410 415

Tyr Gln Ile Ala Val Val Gly Leu Lys Gly Gly Ala Gly Lys Thr Thr  
 420 425 430

Leu Thr Ala Ala Leu Gly Ser Thr Leu Ala Gln Val Arg Ala Asp Arg  
 435 440 445

Ile Leu Ala Leu Asp Ala Asp Pro Gly Ala Gly Asn Leu Ala Asp Arg  
 450 455 460

Val Gly Arg Gln Ser Gly Ala Thr Ile Ala Asp Val Leu Ala Glu Lys  
 465 470 475 480

Glu Leu Ser His Tyr Asn Asp Ile Arg Ala His Thr Ser Val Asn Ala  
 485 490 495

Val Asn Leu Glu Val Leu Pro Ala Pro Glu Tyr Ser Ser Ala Gln Arg  
 500 505 510

Ala Leu Ser Asp Ala Asp Trp His Phe Ile Ala Asp Pro Ala Ser Arg  
 515 520 525

Phe Tyr Asn Leu Val Leu Ala Asp Cys Gly Ala Gly Phe Phe Asp Pro  
 530 535 540

Leu Thr Arg Gly Val Leu Ser Thr Val Ser Gly Val Val Val Val Ala  
 545 550 555 560

Ser Val Ser Ile Asp Gly Ala Gln Gln Ala Ser Val Ala Leu Asp Trp  
 565 570 575

Leu Arg Asn Asn Gly Tyr Gln Asp Leu Ala Ser Arg Ala Cys Val Val  
 580 585 590

Ile Asn His Ile Met Pro Gly Glu Pro Asn Val Ala Val Lys Asp Leu  
 595 600 605

Val Arg His Phe Glu Gln Gln Val Gln Pro Gly Arg Val Val Val Met  
 610 615 620

Pro Trp Asp Arg His Ile Ala Ala Gly Thr Glu Ile Ser Leu Asp Leu  
 625 630 635 640

Leu Asp Pro Ile Tyr Lys Arg Lys Val Leu Glu Leu Ala Ala Ala Leu  
 645 650 655

Ser Asp Asp Phe Glu Arg Ala Gly Arg Arg  
 660 665

<210> 71

<211> 1890

<212> DNA

<213> Mycobacterium tuberculosis

<400> 71

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ctggaccagc tcggcactgc tgaatcgctg gcgtacaaga tgtggctgcc gccgttgacc 180  
aatccggtcc cgctcaacga gctcatcgcc cgtgatcggc gacaaccctt gcgatttgcc 240  
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<210> 72

<211> 591

<212> PRT

<213> Mycobacterium tuberculosis

<400> 72

Met Thr Ala Glu Pro Glu Val Arg Thr Leu Arg Glu Val Val Leu Asp  
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Gln Leu Gly Thr Ala Glu Ser Arg Ala Tyr Lys Met Trp Leu Pro Pro

275	280	285
Arg Phe Asp Gly Val His Ser Ala Asp Asn Leu Val Glu Ala Ile Thr		
290	295	300
Ala Gly Val Thr Gln Ile Ala Ser Gln His Thr Glu Gln Ala Pro Pro		
305	310	315 320
Val Arg Val Leu Pro Glu Arg Ile His Leu His Glu Leu Asp Pro Asn		
325	330	335
Pro Pro Gly Pro Glu Ser Asp Tyr Arg Thr Arg Trp Glu Ile Pro Ile		
340	345	350
Gly Leu Arg Glu Thr Asp Leu Thr Pro Ala His Cys His Met His Thr		
355	360	365
Asn Pro His Leu Leu Ile Phe Gly Ala Ala Lys Ser Gly Lys Thr Thr		
370	375	380
Ile Ala His Ala Ile Ala Arg Ala Ile Cys Ala Arg Asn Ser Pro Gln		
385	390	395 400
Gln Val Arg Phe Met Leu Ala Asp Tyr Arg Ser Gly Leu Leu Asp Ala		
405	410	415
Val Pro Asp Thr His Leu Leu Gly Ala Gly Ala Ile Asn Arg Asn Ser		
420	425	430
Ala Ser Leu Asp Glu Ala Ala Gln Ala Leu Ala Val Asn Leu Lys Lys		
435	440	445
Arg Leu Pro Pro Thr Asp Leu Thr Thr Ala Gln Leu Arg Ser Arg Ser		
450	455	460
Trp Trp Ser Gly Phe Asp Val Val Leu Leu Val Asp Asp Trp His Met		
465	470	475 480
Ile Val Gly Ala Ala Gly Gly Met Pro Pro Met Ala Pro Leu Ala Pro		
485	490	495
Leu Leu Pro Ala Ala Ala Asp Ile Gly Leu His Ile Ile Val Thr Cys		
500	505	510
Gln Met Ser Gln Ala Tyr Lys Ala Thr Met Asp Lys Phe Val Gly Ala		
515	520	525
Ala Phe Gly Ser Gly Ala Pro Thr Met Phe Leu Ser Gly Glu Lys Gln		

530	535	540
Glu Phe Pro Ser Ser Glu Phe Lys Val Lys Arg Arg Pro Pro Gly Gln		
545	550	555 560
Ala Phe Leu Val Ser Pro Asp Gly Lys Glu Val Ile Gln Ala Pro Tyr		
	565	570 575
Ile Glu Pro Pro Glu Glu Val Phe Ala Ala Pro Pro Ser Ala Gly		
	580	585 590

<210> 73  
 <211> 15  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 73			
Asp Pro Val Asp Asp Ala Phe Ile Ala Lys Leu Asn Thr Ala Gly			
1	5	10	15

<210> 74  
 <211> 14  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<220>  
 <221> UNSURE  
 <222> (14)  
 <223> Xaa is unknown

<400> 74			
Asp Pro Val Asp Ala Ile Ile Asn Leu Asp Asn Tyr Gly Xaa			
1	5	10	

<210> 75  
 <211> 15  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<220>  
 <221> UNSURE  
 <222> (5)  
 <223> Xaa is unknown

<400> 75

Ala	Glu	Met	Lys	Xaa	Phe	Lys	Asn	Ala	Ile	Val	Gln	Glu	Ile	Asp
1				5					10					15

<210> 76  
 <211> 14  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<220>  
 <221> VARIANT  
 <222> (3)  
 <223> Ala is Ala or Gln

<220>  
 <221> VARIANT  
 <222> (7)  
 <223> Thr is Gly or Thr

<220>  
 <221> UNSURE  
 <222> (11)  
 <223> Xaa is unknown

<400> 76														
Val	Ile	Ala	Gly	Met	Val	Thr	His	Ile	His	Xaa	Val	Ala	Gly	
1					5									10

<210> 77  
 <211> 15  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 77														
Thr	Asn	Ile	Val	Val	Leu	Ile	Lys	Gln	Val	Pro	Asp	Thr	Trp	Ser
1					5					10				15

<210> 78  
 <211> 15  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 78														
Ala	Ile	Glu	Val	Ser	Val	Leu	Arg	Val	Phe	Thr	Asp	Ser	Asp	Gly
1						5					10			15



<210> 79  
<211> 15  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 79  
Ala Lys Leu Ser Thr Asp Glu Leu Leu Asp Ala Phe Lys Glu Met  
1 5 10 15

<210> 80  
<211> 15  
<212> PRT  
<213> Mycobacterium tuberculosis

<220>  
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<222> (4)  
<223> Asp is Asp or Glu

<400> 80  
Asp Pro Ala Asp Ala Pro Asp Val Pro Thr Ala Ala Gln Leu Thr  
1 5 10 15

<210> 81  
<211> 50  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 81  
Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val Val  
1 5 10 15

Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu Leu  
20 25 30

Glu Ser Met Tyr Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly Thr  
35 40 45

Val Ser  
50

<210> 82  
<211> 15  
<212> PRT

<213> Mycobacterium tuberculosis

<400> 82

Thr Thr Ser Pro Asp Pro Tyr Ala Ala Leu Pro Lys Leu Pro Ser  
1 5 10 15

<210> 83

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<400> 83

Thr Glu Tyr Glu Gly Pro Lys Thr Lys Phe His Ala Leu Met Gln  
1 5 10 15

<210> 84

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<400> 84

Thr Thr Ile Val Ala Leu Lys Tyr Pro Gly Gly Val Val Met Ala  
1 5 10 15

<210> 85

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<220>

<221> UNSURE

<222> (10)

<223> Xaa is unknown

<220>

<221> UNSURE

<222> (15)

<223> Xaa is unknown

<400> 85

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1 5 10 15

<210> 86

<211> 15  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 86  
 Thr His Tyr Asp Val Val Val Leu Gly Ala Gly Pro Gly Gly Tyr  
 1 5 10 15

<210> 87  
 <211> 450  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 87  
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 acatgatccg atcgtctgcc acattggcac gcaagtgagc gacaacgctc tgcacggcgt 180  
 gacggccggc tcgacggcgc tgacgtcggg gaccgggctg gttcccgcgg gggccgatga 240  
 ggtctccgcc caagcggcga cggcggtcac atcggagggc atccaattgc tggcttccaa 300  
 tgcacgggcc caagaccagc tccaccgtgc gggcgaagcg gtccaggacg tcgcccgcac 360  
 ctattcgcaa atcgacgacg gcgccgccgg cgtcttcgcc taataggccc ccaacacatc 420  
 ggaggggagtg atcaccatgc tgtggcacgc 450

<210> 88  
 <211> 98  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 88  
 Met Glu Lys Met Ser His Asp Pro Ile Ala Ala Asp Ile Gly Thr Gln  
 1 5 10 15

Val Ser Asp Asn Ala Leu His Gly Val Thr Ala Gly Ser Thr Ala Leu  
 20 25 30

Thr Ser Val Thr Gly Leu Val Pro Ala Gly Ala Asp Glu Val Ser Ala  
 35 40 45

Gln Ala Ala Thr Ala Phe Thr Ser Glu Gly Ile Gln Leu Leu Ala Ser  
 50 55 60

Asn Ala Ser Ala Gln Asp Gln Leu His Arg Ala Gly Glu Ala Val Gln  
 65 70 75 80

Asp Val Ala Arg Thr Tyr Ser Gln Ile Asp Asp Gly Ala Ala Gly Val  
 85 90 95

Phe Ala

<210> 89

<211> 460

<212> DNA

<213> Mycobacterium tuberculosis

<400> 89

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agcggatggg tcgacagcgg actggtgccg agcaggccca tctgcgcggc ttctctgctc 180
gctgggttgc cgccgccggg gccgcccacc tggctgaaca acgacgtcac ctgctgcagc 240
ggctgggtca gctgctgcat cgggcgcgtc atctcaccca gttggccgag ggtctgggta 300
gccgccggcg gcaactggcc aaccgggtgt gagctgccag gggagggcat tccgaagatc 360
gggttcgctc tgctctggct cgcgccggga tcaaggatcg acgccatcgg ctcgagcttc 420
tcgaaaagcg tgtaaccgc ggtctcggcc tggtagacct 460
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<210> 90

<211> 139

<212> PRT

<213> Mycobacterium tuberculosis

<400> 90

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  1              5              10              15
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Arg Pro Ala Pro Ala Leu Gly Pro Asp Pro Pro Ala Ser Gly Trp Phe
          20              25              30
```

```
Asp Ser Gly Leu Val Pro Ser Arg Pro Ile Cys Ala Ala Ser Ser Ser
          35              40              45
```

```
Ala Gly Leu Pro Pro Pro Val Pro Pro Thr Trp Leu Asn Asn Asp Val
          50              55              60
```

```
Thr Cys Cys Ser Gly Trp Val Ser Cys Cys Ile Gly Pro Leu Ile Ser
          65              70              75              80
```

```
Pro Ser Trp Pro Arg Val Trp Val Ala Ala Gly Gly Asn Trp Pro Thr
          85              90              95
```

```
Gly Val Glu Leu Pro Gly Glu Gly Ile Pro Lys Ile Gly Phe Val Val
          100             105             110
```

```
Leu Trp Leu Ala Pro Gly Ser Arg Ile Asp Ala Ile Gly Ser Ser Phe
          115             120             125
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Ser Lys Ser Val Leu Thr Ala Val Ser Ala Trp  
 130 135

<210> 91  
 <211> 1200  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 91  
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 gcgggatggc agacgcttcc ggcggtctct gacgctcagg ccgtcgagtt gaccgcgcgc 180  
 ctgaactctc tgggagaagc ctggactgga ggtggcagcg acaaggcgct tgcggctgca 240  
 acgccgatgg tggctctggc acaaaccgcg tcaacacagg ccaagaccgc tgcgatgcag 300  
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 atcgccgcca accacatcac ccaggccgtc cttacggcca ccaacttctt cggatatcaac 420  
 acgatcccca tcgcttgac cgagatggat tatttcatcc gtatgtggaa ccaggcagcc 480  
 ctggcaatgg aggtctacca ggccgagacc gcggttaaca cgcttttcga gaagctcgag 540  
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 ctcggccaac tgggtgagat gagcgccccg atgcagcagc tgaccagcc gctgcagcag 720  
 gtgacgtcgt tgttcagcca ggtgggcggc accggcggcg gcaaccagc cgacgaggaa 780  
 gccgcgcaga tgggcctgct cggcaccagt ccgctgtcga accatccgct ggctgggtgga 840  
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 tcgttgaccc gcacgcgcgt gatgtctcag ctgatcgaaa agccgggttg cccctcggtg 960  
 atgccggcgg ctgctgccgg atcgctggcg acgggtggcg ccgctccggt ggggtgcggga 1020  
 gcgatgggcc aggtgcgca atccggcggc tccaccaggc cgggtctggt cgcgccggca 1080  
 ccgctcgcgc aggagcgtga agaagacgac gaggacgact gggacgaaga ggacgactgg 1140  
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<210> 92  
 <211> 371  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 92  
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 Arg Leu Met Ala Gly Ala Gly Pro Ala Pro Met Leu Ala Ala Ala Ala  
 20 25 30  
 Gly Trp Gln Thr Leu Ser Ala Ala Leu Asp Ala Gln Ala Val Glu Leu  
 35 40 45  
 Thr Ala Arg Leu Asn Ser Leu Gly Glu Ala Trp Thr Gly Gly Gly Ser

50	55	60
Asp Lys Ala Leu Ala Ala Ala Thr Pro Met Val Val Trp Leu Gln Thr		
65	70	75 80
Ala Ser Thr Gln Ala Lys Thr Arg Ala Met Gln Ala Thr Ala Gln Ala		
85	90	95
Ala Ala Tyr Thr Gln Ala Met Ala Thr Thr Pro Ser Leu Pro Glu Ile		
100	105	110
Ala Ala Asn His Ile Thr Gln Ala Val Leu Thr Ala Thr Asn Phe Phe		
115	120	125
Gly Ile Asn Thr Ile Pro Ile Ala Leu Thr Glu Met Asp Tyr Phe Ile		
130	135	140
Arg Met Trp Asn Gln Ala Ala Leu Ala Met Glu Val Tyr Gln Ala Glu		
145	150	155 160
Thr Ala Val Asn Thr Leu Phe Glu Lys Leu Glu Pro Met Ala Ser Ile		
165	170	175
Leu Asp Pro Gly Ala Ser Gln Ser Thr Thr Asn Pro Ile Phe Gly Met		
180	185	190
Pro Ser Pro Gly Ser Ser Thr Pro Val Gly Gln Leu Pro Pro Ala Ala		
195	200	205
Thr Gln Thr Leu Gly Gln Leu Gly Glu Met Ser Gly Pro Met Gln Gln		
210	215	220
Leu Thr Gln Pro Leu Gln Gln Val Thr Ser Leu Phe Ser Gln Val Gly		
225	230	235 240
Gly Thr Gly Gly Gly Asn Pro Ala Asp Glu Glu Ala Ala Gln Met Gly		
245	250	255
Leu Leu Gly Thr Ser Pro Leu Ser Asn His Pro Leu Ala Gly Gly Ser		
260	265	270
Gly Pro Ser Ala Gly Ala Gly Leu Leu Arg Ala Glu Ser Leu Pro Gly		
275	280	285
Ala Gly Gly Ser Leu Thr Arg Thr Pro Leu Met Ser Gln Leu Ile Glu		
290	295	300
Lys Pro Val Ala Pro Ser Val Met Pro Ala Ala Ala Ala Gly Ser Ser		

305

310

315

320

Ala Thr Gly Gly Ala Ala Pro Val Gly Ala Gly Ala Met Gly Gln Gly  
325 330 335

Ala Gln Ser Gly Gly Ser Thr Arg Pro Gly Leu Val Ala Pro Ala Pro  
340 345 350

Leu Ala Gln Glu Arg Glu Glu Asp Asp Glu Asp Asp Trp Asp Glu Glu  
355 360 365

Asp Asp Trp  
370

<210> 93

<211> 1000

<212> DNA

<213> Mycobacterium tuberculosis

<400> 93

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tgggtgcatg	cgttgacgcg	aatcaacctg	ggcctgtcac	ccgacgagaa	gtacgagctg	180
gacctgcacg	ctcgagtccg	ccgcaatccc	cgcgggtcgt	atcagatcgc	cgtcgtcgg	240
ctcaaaggtg	gggctggcaa	aaccacgctg	acagcagcgt	tggggctcgac	gttggctcag	300
gtgcggggccg	accggatcct	ggctctagac	gcggatccag	gcgcgggaaa	cctcgccgat	360
cgggtagggc	gacaatcggg	cgcgaccatc	gctgatgtgc	ttgcagaaaa	agagctgtcg	420
cactacaacg	acatccgcgc	acacactagc	gtcaatgcgg	tcaatctgga	agtgtgccg	480
gcaccggaat	acagctcggc	gcagcgcgcg	ctcagcgacg	ccgactggca	tttcatcgcc	540
gatcctgcgt	cgaggtttta	caacctcgtc	ttggctgatt	gtggggccgg	cttcttcgac	600
ccgctgacct	gcggcgtgct	gtccacggtg	tccggtgtcg	tggctcgtggc	aagtgtctca	660
atcgacggcg	cacaacaggc	gtcggtcgcg	ttggactggt	tgcgcaacaa	cggttaccaa	720
gatttggcga	gccgcgcgatg	cgtggtcatc	aatcacatca	tgcggggaga	acccaatgtc	780
gcagttaaag	acctggtgcg	gcatttcgaa	cagcaagttc	aaccgcggcg	ggtcgtggtc	840
atgccgtggg	acaggcacat	tgcggccgga	accgagattt	cactcgactt	gctcgacctt	900
atctacaagc	gcaaggtcct	cgaattggcc	gcagcgtat	ccgacgattt	cgagaggggt	960
ggacgtcgtt	gagcgcacct	gctgttgctg	ctggtcctac			1000

<210> 94

<211> 308

<212> PRT

<213> Mycobacterium tuberculosis

<400> 94

Met Lys Lys Val Lys Pro Gln Lys Pro Lys Ala Thr Lys Pro Pro Lys  
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Val	Val	Ser	Gln	Arg	Gly	Trp	Arg	His	Trp	Val	His	Ala	Leu	Thr	Arg	20	25	30	
Ile	Asn	Leu	Gly	Leu	Ser	Pro	Asp	Glu	Lys	Tyr	Glu	Leu	Asp	Leu	His	35	40	45	
Ala	Arg	Val	Arg	Arg	Asn	Pro	Arg	Gly	Ser	Tyr	Gln	Ile	Ala	Val	Val	50	55	60	
Gly	Leu	Lys	Gly	Gly	Ala	Gly	Lys	Thr	Thr	Leu	Thr	Ala	Ala	Leu	Gly	65	70	75	80
Ser	Thr	Leu	Ala	Gln	Val	Arg	Ala	Asp	Arg	Ile	Leu	Ala	Leu	Asp	Ala	85	90	95	
Asp	Pro	Gly	Ala	Gly	Asn	Leu	Ala	Asp	Arg	Val	Gly	Arg	Gln	Ser	Gly	100	105	110	
Ala	Thr	Ile	Ala	Asp	Val	Leu	Ala	Glu	Lys	Glu	Leu	Ser	His	Tyr	Asn	115	120	125	
Asp	Ile	Arg	Ala	His	Thr	Ser	Val	Asn	Ala	Val	Asn	Leu	Glu	Val	Leu	130	135	140	
Pro	Ala	Pro	Glu	Tyr	Ser	Ser	Ala	Gln	Arg	Ala	Leu	Ser	Asp	Ala	Asp	145	150	155	160
Trp	His	Phe	Ile	Ala	Asp	Pro	Ala	Ser	Arg	Phe	Tyr	Asn	Leu	Val	Leu	165	170	175	
Ala	Asp	Cys	Gly	Ala	Gly	Phe	Phe	Asp	Pro	Leu	Thr	Arg	Gly	Val	Leu	180	185	190	
Ser	Thr	Val	Ser	Gly	Val	Val	Val	Val	Ala	Ser	Val	Ser	Ile	Asp	Gly	195	200	205	
Ala	Gln	Gln	Ala	Ser	Val	Ala	Leu	Asp	Trp	Leu	Arg	Asn	Asn	Gly	Tyr	210	215	220	
Gln	Asp	Leu	Ala	Ser	Arg	Ala	Cys	Val	Val	Ile	Asn	His	Ile	Met	Pro	225	230	235	240
Gly	Glu	Pro	Asn	Val	Ala	Val	Lys	Asp	Leu	Val	Arg	His	Phe	Glu	Gln	245	250	255	
Gln	Val	Gln	Pro	Gly	Arg	Val	Val	Val	Met	Pro	Trp	Asp	Arg	His	Ile	260	265	270	



Ala Ala Gly Thr Glu Ile Ser Leu Asp Leu Leu Asp Pro Ile Tyr Lys  
 275 280 285

Arg Lys Val Leu Glu Leu Ala Ala Ala Leu Ser Asp Asp Phe Glu Arg  
 290 295 300

Ala Gly Arg Arg  
 305

<210> 95  
 <211> 34  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 95  
 aagagtagat ctatgatggc cgaggatggt cgcg 34

<210> 96  
 <211> 27  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 96  
 cggcgacgac ggatcctacc gcgtcgg 27

<210> 97  
 <211> 28  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 97  
 ccttgggaga tctttggacc ccggttgc 28

<210> 98  
 <211> 25  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 98  
 gacgagatct tatgggctta ctgac 25

<210> 99  
 <211> 33  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 99

ccccccagat ctgcaccacc ggcacggcg ggc 33

<210> 100

<211> 24

<212> DNA

<213> Mycobacterium tuberculosis

<400> 100

gcggcggatc cggtgcttag ccgg 24

<210> 101

<211> 32

<212> DNA

<213> Mycobacterium tuberculosis

<400> 101

ccggctgaga tctatgacag aatacgaagg gc 32

<210> 102

<211> 24

<212> DNA

<213> Mycobacterium tuberculosis

<400> 102

ccccgccagg gaactagagg cggc 24

<210> 103

<211> 38

<212> DNA

<213> Mycobacterium tuberculosis

<400> 103

ctgccgagat ctaccacat tgtcgcgctg aaataccc 38

<210> 104

<211> 25

<212> DNA

<213> Mycobacterium tuberculosis

<400> 104

cgccatggcc ttacgcgcca actcg 25

<210> 105

<211> 32

<212> DNA

<213> Mycobacterium tuberculosis

<400> 105

ggcggagatc tgtgagtttt ccgtatttca tc

32

<210> 106

<211> 25

<212> DNA

<213> Mycobacterium tuberculosis

<400> 106

cgcgtcgagc catggttagg cgcag

25

<210> 107

<211> 32

<212> DNA

<213> Mycobacterium tuberculosis

<400> 107

gaggaagatc tatgacaact tcacccgacc cg

32

<210> 108

<211> 28

<212> DNA

<213> Mycobacterium tuberculosis

<400> 108

catgaagcca tggcccgcag gctgcatg

28

<210> 109

<211> 33

<212> DNA

<213> Mycobacterium tuberculosis

<400> 109

ggccgagatc tgtgaccac tatgacgtcg tcg

33

<210> 110

<211> 36

<212> DNA

<213> Mycobacterium tuberculosis

<400> 110

ggcgcccatg gtcagaaatt gatcatgtgg ccaacc

36

<210> 111

<211> 33

<212> DNA

<213> Mycobacterium tuberculosis

<400> 111

ccgggagatc tatggcaaag ctctccaccg acg

33

<210> 112

<211> 32

<212> DNA

<213> Mycobacterium tuberculosis

<400> 112

cgctgggcag agctacttga cggtgacggt gg

32

<210> 113

<211> 36

<212> DNA

<213> Mycobacterium tuberculosis

<400> 113

ggcccagatc tatggccatt gaggtttcgg tgttgc

36

<210> 114

<211> 26

<212> DNA

<213> Mycobacterium tuberculosis

<400> 114

cgccgtgttg catggcagcg ctgagc

26

<210> 115

<211> 24

<212> DNA

<213> Mycobacterium tuberculosis

<400> 115

ggacgttcaa gcgacacatc gccg

24

<210> 116

<211> 24

<212> DNA

<213> Mycobacterium tuberculosis

<400> 116

cagcacgaac gcgccgtcga tggc

24

<210> 117

<211> 26

<212> DNA

<213> Mycobacterium tuberculosis

<400> 117

acagatctgt gacggacatg aacccg

26

<210> 118

<211> 28

<212> DNA

<213> Mycobacterium tuberculosis

<400> 118

ttttccatgg tcacggggccc ccggtact

28

<210> 119

<211> 26

<212> DNA

<213> Mycobacterium tuberculosis

<400> 119

acagatctgt gcccattggca cagata

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<210> 120

<211> 27

<212> DNA

<213> Mycobacterium tuberculosis

<400> 120

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<210> 121

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<212> DNA

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<400> 121

acagatctgc gcatgcggat ccgtgt

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<210> 122

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<212> DNA

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<400> 122

ttttccatgg tcatccggcg tgatcgag

28

<210> 123

<211> 26

<212> DNA

<213> Mycobacterium tuberculosis

<400> 123

acagatctgt aatggcagac tgtgat

26

<210> 124

<211> 28

<212> DNA

<213> Mycobacterium tuberculosis

<400> 124

ttttccatgg tcaggagatg gtgatcga

28

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<212> DNA

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<400> 125

acagatctgc cggctacccc ggtgcc

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<210> 126

<211> 28

<212> DNA

<213> Mycobacterium tuberculosis

<400> 126

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28

<210> 127

<211> 50

<212> PRT

<213> Mycobacterium tuberculosis

<400> 127

Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val Val  
1 5 10 15

Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu Leu  
20 25 30

Glu Ser Met Tyr Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly Thr  
35 40 45

Val Ser  
50

<210> 128

<211> 49

<212> PRT

<213> Mycobacterium tuberculosis

<400> 128

Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val Val  
1 5 10 15

Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu Leu  
20 25 30

Glu Ser Met Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly Thr Val  
35 40 45

Ser

<210> 129

<211> 50

<212> PRT

<213> Mycobacterium tuberculosis

<400> 129

Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val Val  
1 5 10 15

Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu Leu  
20 25 30

Glu Ser Met Lys Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly Thr  
35 40 45

Val Ser  
50

<210> 130

<211> 33

<212> DNA

<213> Mycobacterium tuberculosis

<400> 130

ccgggagatc tatggcaaag ctctccaccg acg

33

<210> 131

<211> 32

<212> DNA

<213> Mycobacterium tuberculosis

<400> 131  
cgctgggcag agctacttga cggtgacggt gg 32

<210> 132  
<211> 36  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 132  
ggcgccggca agcttgccat gacagagcag cagtgg 36

<210> 133  
<211> 26  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 133  
cgaactcgcc ggatcccgtg tttcgc 26

<210> 134  
<211> 32  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 134  
ggcaaccgcg agatctttct cccggccggg gc 32

<210> 135  
<211> 27  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 135  
ggcaagcttg ccggcgcccta acgaact 27

<210> 136  
<211> 30  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 136  
ggacccagat ctatgacaga gcagcagtgg 30

<210> 137  
<211> 47  
<212> DNA  
<213> Mycobacterium tuberculosis



<400> 137  
ccggcagccc cggccgggag aaaagctttg cgaacatccc agtgacg 47

<210> 138  
<211> 44  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 138  
gttcgcaaag cttttctccc ggccggggct gccggtcgag tacc 44

<210> 139  
<211> 20  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 139  
ccttcggtgg atcccgtcag 20

<210> 140  
<211> 450  
<212> DNA  
<213> Mycobacterium tuberculosis

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ggccagcatg aacgtcaccg tatccattcc gaccatcctg cggccccaca ccggcggcca 120  
gaagagtgtc tcggccagcg gcgatacctt ggggtgccgtc atcagcgacc tggaggccaa 180  
ctattcgggc atttccgagc gcctgatgga cccgtcttcc ccaggtaagt tgcaccgctt 240  
cgtgaacatc tacgtcaacg acgaggacgt gcggttctcc gccggcttgg ccaccgcat 300  
cgctgacggg gactcgggtc ccatacctccc cgcctgggcc ggtgggtgag cggagcacat 360  
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attgtcgcca cgctgggatg acgggcgaga 450

<210> 141  
<211> 93  
<212> PRT  
<213> Mycobacterium tuberculosis

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Met Asn Val Thr Val Ser Ile Pro Thr Ile Leu Arg Pro His Thr Gly  
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20 25 30

Ser Asp Leu Glu Ala Asn Tyr Ser Gly Ile Ser Glu Arg Leu Met Asp  
35 40 45

Pro Ser Ser Pro Gly Lys Leu His Arg Phe Val Asn Ile Tyr Val Asn  
 50 55 60

Asp Glu Asp Val Arg Phe Ser Gly Gly Leu Ala Thr Ala Ile Ala Asp  
 65 70 75 80

Gly Asp Ser Val Thr Ile Leu Pro Ala Val Ala Gly Gly  
 85 90

<210> 142

<211> 480

<212> DNA

<213> Mycobacterium tuberculosis

<400> 142

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 atgcgggaca tggcggggccg ttttgagggtg cagcggcaga cgggtggagga cgaggctcgc 180  
 cggatgtggg cgtccgcgca aaacatctcg ggcgggggct ggagtggcat ggccgaggcg 240  
 acctcgctag acaccatggc ccagatgaat caggcggtttc gcaacatcgt gaacatgctg 300  
 cacgggggtgc gtgacgggct gggtcgcgac gccacaact acgagcagca agagcaggcc 360  
 tcccagcaga tcctcagcag ctaacgtcag ccgctgcagc acaatacttt tacaagcgaa 420  
 ggagaacagg ttcgatgacc atcaactatc agttcgggtga tgtcgacgct catggcgcca 480

<210> 143

<211> 98

<212> PRT

<213> Mycobacterium tuberculosis

<400> 143

Met Ala Thr Arg Phe Met Thr Asp Pro His Ala Met Arg Asp Met Ala  
 1 5 10 15

Gly Arg Phe Glu Val His Ala Gln Thr Val Glu Asp Glu Ala Arg Arg  
 20 25 30

Met Trp Ala Ser Ala Gln Asn Ile Ser Gly Ala Gly Trp Ser Gly Met  
 35 40 45

Ala Glu Ala Thr Ser Leu Asp Thr Met Ala Gln Met Asn Gln Ala Phe  
 50 55 60

Arg Asn Ile Val Asn Met Leu His Gly Val Arg Asp Gly Leu Val Arg  
 65 70 75 80

Asp Ala Asn Asn Tyr Glu Gln Gln Glu Gln Ala Ser Gln Gln Ile Leu

Ser Ser

<210> 144

<211> 940

<212> DNA

<213> Mycobacterium tuberculosis

<400> 144

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gccccagtcc tcgatcgccct catcgcccttc accggccgcc agccgaccgc aggccacgtg 60
tccgccacct aacgaaagga tgatcatgcc caagagaagc gaatacaggc aaggcacgcc 120
gaactgggtc gaccttcaga ccaccgatca gtccgccgcc aaaaagttct acacatcggt 180
gttcgggtgg ggttacgacg acaaccgggt ccccgagggc ggtgggggtct attccatggc 240
cacgctgaac ggcgaagccg tggccgccat cgcaccgatg ccccggggtg caccggaggg 300
gatgccgccg atctggaaca cctatatcgc ggtggacgac gtcgatgcgg tggaggacaa 360
ggtggtgccc gggggcgggc aggtgatgat gccggccttc gacatcggcg atgccggccg 420
gatgtcgttc atcaccgatc cgaccggcgc tgcggtgggc ctatggcagg ccaatcggca 480
catcgaggcg acgttgggtca acgagacggg cacgctcatc tggaacgaac tgctcacgga 540
caagccggat ttggcgctag cgttctacga ggctgtgggt ggcctcacc actcgagcat 600
ggagatagct gcgggccaga actatcgggt gctcaaggcc ggcgacgcgg aagtcggcgg 660
ctgtatggaa ccgccgatgc ccggcggtgc gaatcattgg cagctctact ttgcggtgga 720
tgacgccgac gccacggcgg ccaaagccgc cgcagcgggc ggccagggtca ttgcggaacc 780
ggctgacatt ccgtcggtgg gccggttcgc cgtgttggtc gatccgcagg gcgcgatctt 840
cagtgtgttg aagcccgac cgcagcaata gggagcatcc cgggcaggcc cgccggccgg 900
cagattcgga gaatgctaga agctgccgcc ggcgccgccg 940

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<210> 145

<211> 261

<212> PRT

<213> Mycobacterium tuberculosis

<400> 145

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Met Pro Lys Arg Ser Glu Tyr Arg Gln Gly Thr Pro Asn Trp Val Asp
  1             5             10             15

Leu Gln Thr Thr Asp Gln Ser Ala Ala Lys Lys Phe Tyr Thr Ser Leu
      20             25             30

Phe Gly Trp Gly Tyr Asp Asp Asn Pro Val Pro Gly Gly Gly Gly Val
      35             40             45

Tyr Ser Met Ala Thr Leu Asn Gly Glu Ala Val Ala Ala Ile Ala Pro
      50             55             60

Met Pro Pro Gly Ala Pro Glu Gly Met Pro Pro Ile Trp Asn Thr Tyr

```

65		70		75		80
Ile Ala Val Asp Asp Val Asp Ala Val Val Asp Lys Val Val Pro Gly						
	85		90		95	
Gly Gly Gln Val Met Met Pro Ala Phe Asp Ile Gly Asp Ala Gly Arg						
	100		105		110	
Met Ser Phe Ile Thr Asp Pro Thr Gly Ala Ala Val Gly Leu Trp Gln						
	115		120		125	
Ala Asn Arg His Ile Gly Ala Thr Leu Val Asn Glu Thr Gly Thr Leu						
	130		135		140	
Ile Trp Asn Glu Leu Leu Thr Asp Lys Pro Asp Leu Ala Leu Ala Phe						
145		150		155		160
Tyr Glu Ala Val Val Gly Leu Thr His Ser Ser Met Glu Ile Ala Ala						
	165		170		175	
Gly Gln Asn Tyr Arg Val Leu Lys Ala Gly Asp Ala Glu Val Gly Gly						
	180		185		190	
Cys Met Glu Pro Pro Met Pro Gly Val Pro Asn His Trp His Val Tyr						
	195		200		205	
Phe Ala Val Asp Asp Ala Asp Ala Thr Ala Ala Lys Ala Ala Ala Ala						
	210		215		220	
Gly Gly Gln Val Ile Ala Glu Pro Ala Asp Ile Pro Ser Val Gly Arg						
225		230		235		240
Phe Ala Val Leu Ser Asp Pro Gln Gly Ala Ile Phe Ser Val Leu Lys						
	245		250		255	
Pro Ala Pro Gln Gln						
	260					

<210> 146

<211> 280

<212> DNA

<213> Mycobacterium tuberculosis

<400> 146

ccgaaaggcg gtgcaccgca cccagaagaa aaggaaagat cgagaaatgc cacagggAAC 60  
 tgtgaagtgg ttcaacgcgg agaaggggtt cggctttatc gccccgaag acggttccgc 120  
 ggatgtattt gtccactaca cggagatcca gggAACgggc ttccgcaccc ttgaagaaaa 180

ccagaaggtc gagttcgaga tcggccacag ccctaagggc ccccaggcca ccggagtccg 240  
ctcgtcttga gttacccccg cgagcagacg caaaaagccc 280

<210> 147

<211> 67

<212> PRT

<213> Mycobacterium tuberculosis

<400> 147

Met Pro Gln Gly Thr Val Lys Trp Phe Asn Ala Glu Lys Gly Phe Gly  
1 5 10 15

Phe Ile Ala Pro Glu Asp Gly Ser Ala Asp Val Phe Val His Tyr Thr  
20 25 30

Glu Ile Gln Gly Thr Gly Phe Arg Thr Leu Glu Glu Asn Gln Lys Val  
35 40 45

Glu Phe Glu Ile Gly His Ser Pro Lys Gly Pro Gln Ala Thr Gly Val  
50 55 60

Arg Ser Leu  
65

<210> 148

<211> 540

<212> DNA

<213> Mycobacterium tuberculosis

<400> 148

atcgtgtcgt atcgagaacc ccggccggta tcagaacgcg ccagagcgca aacctttata 60  
acttcgtgtc ccaaagtga cgaccatgga ccaaggttcc tgagatgaac ctacggcgcc 120  
atcagaccct gacgctgoga ctgctggcgg catccgcggg cattctcagc gccgcggcct 180  
tcgcccgcgc agcacaggca aaccccgtcg acgacgcgtt catcgccgcg ctgaacaatg 240  
ccggcgctcaa ctacggcgat ccggctcgacg ccaaagcgct gggtcagtcc gtctgcccga 300  
tcctggccga gcccggcggg tcgtttaaca ccgcggtagc cagcgttggt gcgcgcgccc 360  
aaggcatgtc ccaggacatg gcgcaaacct tcaccagtat cgcgatttcg atgtactgcc 420  
cctcggtgat ggcagacgtc gccagcggca acctgccggc cctgccagac atgccggggc 480  
tgcccgggtc ctaggcgtgc gcggctccta gccggtccct aacggatcga tcgtggatgc 540

<210> 149

<211> 129

<212> PRT

<213> Mycobacterium tuberculosis

<400> 149

Met Asn Leu Arg Arg His Gln Thr Leu Thr Leu Arg Leu Leu Ala Ala

1	5	10	15
Ser Ala Gly Ile Leu Ser Ala Ala Ala Phe Ala Ala Pro Ala Gln Ala			
20	25	30	
Asn Pro Val Asp Asp Ala Phe Ile Ala Ala Leu Asn Asn Ala Gly Val			
35	40	45	
Asn Tyr Gly Asp Pro Val Asp Ala Lys Ala Leu Gly Gln Ser Val Cys			
50	55	60	
Pro Ile Leu Ala Glu Pro Gly Gly Ser Phe Asn Thr Ala Val Ala Ser			
65	70	75	80
Val Val Ala Arg Ala Gln Gly Met Ser Gln Asp Met Ala Gln Thr Phe			
85	90	95	
Thr Ser Ile Ala Ile Ser Met Tyr Cys Pro Ser Val Met Ala Asp Val			
100	105	110	
Ala Ser Gly Asn Leu Pro Ala Leu Pro Asp Met Pro Gly Leu Pro Gly			
115	120	125	

Ser

<210> 150  
 <211> 400  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 150  
 atagtttggg gaaggtgtcc ataatgagg ctgtcgttga ccgcattgag cgccggtgta 60  
 ggcgccgtgg caatgtcggt gaccgtcggg gccggggtcg cctccgcaga tcccgtggac 120  
 gcggtcatta acaccacctg caattacggg caggtagtag ctgcgctcaa cgcgacggat 180  
 ccggggggctg ccgcacagtt caacgcctca ccggtggcgc agtcctatatt gcgcaatttc 240  
 ctgcgcgcac cgccacctca gcgcgtgcc atggccgcgc aattgcaagc tgtgccgggg 300  
 gcggcacagt acatcggcct tgtcgagtcg gttgccgget cctgcaacaa ctattaagcc 360  
 catgcgggcc ccatcccgcg acccgcatc gtcgccgggg 400

<210> 151  
 <211> 110  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 151  
 Met Arg Leu Ser Leu Thr Ala Leu Ser Ala Gly Val Gly Ala Val Ala

1	5	10	15
Met Ser Leu Thr Val Gly Ala Gly Val Ala Ser Ala Asp Pro Val Asp			
20	25	30	
Ala Val Ile Asn Thr Thr Cys Asn Tyr Gly Gln Val Val Ala Ala Leu			
35	40	45	
Asn Ala Thr Asp Pro Gly Ala Ala Ala Gln Phe Asn Ala Ser Pro Val			
50	55	60	
Ala Gln Ser Tyr Leu Arg Asn Phe Leu Ala Ala Pro Pro Pro Gln Arg			
65	70	75	80
Ala Ala Met Ala Ala Gln Leu Gln Ala Val Pro Gly Ala Ala Gln Tyr			
85	90	95	
Ile Gly Leu Val Glu Ser Val Ala Gly Ser Cys Asn Asn Tyr			
100	105	110	

<210> 152

<211> 990

<212> DNA

<213> Mycobacterium tuberculosis

<400> 152

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aatagtaata tcgctgtgcg gttgcaaac gtgtgaccga ggttccgcag tcgagcgctg 60
cgggccgcct tcgaggagga cgaaccacag tcatgacgaa catcgtgggtc ctgatcaagc 120
aggtcccaga tacctgggtcg gagcgcaagc tgaccgacgg cgatttcacg ctggaccgcy 180
aggccgccga cgcggtgctg gacgagatca acgagcgcg cgtggaggaa gcgctacaga 240
ttcgggagaa agaggccgcc gacggcatcg aagggtcggt aaccgtgctg acggcgggcc 300
ccgagcgcg caccgaggcg atccgcaagg cgctgtcgat gggtgccgac aaggccgtcc 360
acctaaaagga cgacggcatg cacggctcgg acgtcatcca aaccgggtgg gctttggcgc 420
gcgcgttggg caccatcgag ggcaccgagc tggatgatcg aggcaacgaa tcgaccgacg 480
gggtgggcgg tgcggtgccg gccatcatcg ccgagtacct gggcctgccg cagctcacc 540
acctgcgcaa agtgtcgatc gagggcgcca agatcacggg cgagcgtgag accgatgagg 600
gcgtattcac cctcgaggcc acgctgcccg cggtgatcag cgtgaacgag aagatcaacg 660
agccgcgctt cccgtccttc aaaggcatca tggccgcca gaagaaggaa gttaccgtgc 720
tgaccctggc cgagatcggg gtcgagagcg acgaggtggg gctggccaac gccgatcca 780
ccgtgctggc gtcgacgccc aaaccggcca agactgccgg ggagaagggtc accgacgagg 840
gtgaaggcgg caaccagatc gtgcagtacc tggttgccca gaaaatcatc taagacatac 900
gcacctcca aagacgagag cgatataacc catggctgaa gtactggtgc tcgttagagca 960
cgctgaaggc gcgttaaaga aggtcagcgc
990

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<210> 153

<211> 266

<212> PRT

<213> Mycobacterium tuberculosis

<400> 153

Met Thr Asn Ile Val Val Leu Ile Lys Gln Val Pro Asp Thr Trp Ser  
1 5 10 15

Glu Arg Lys Leu Thr Asp Gly Asp Phe Thr Leu Asp Arg Glu Ala Ala  
20 25 30

Asp Ala Val Leu Asp Glu Ile Asn Glu Arg Ala Val Glu Glu Ala Leu  
35 40 45

Gln Ile Arg Glu Lys Glu Ala Ala Asp Gly Ile Glu Gly Ser Val Thr  
50 55 60

Val Leu Thr Ala Gly Pro Glu Arg Ala Thr Glu Ala Ile Arg Lys Ala  
65 70 75 80

Leu Ser Met Gly Ala Asp Lys Ala Val His Leu Lys Asp Asp Gly Met  
85 90 95

His Gly Ser Asp Val Ile Gln Thr Gly Trp Ala Leu Ala Arg Ala Leu  
100 105 110

Gly Thr Ile Glu Gly Thr Glu Leu Val Ile Ala Gly Asn Glu Ser Thr  
115 120 125

Asp Gly Val Gly Gly Ala Val Pro Ala Ile Ile Ala Glu Tyr Leu Gly  
130 135 140

Leu Pro Gln Leu Thr His Leu Arg Lys Val Ser Ile Glu Gly Gly Lys  
145 150 155 160

Ile Thr Gly Glu Arg Glu Thr Asp Glu Gly Val Phe Thr Leu Glu Ala  
165 170 175

Thr Leu Pro Ala Val Ile Ser Val Asn Glu Lys Ile Asn Glu Pro Arg  
180 185 190

Phe Pro Ser Phe Lys Gly Ile Met Ala Ala Lys Lys Lys Glu Val Thr  
195 200 205

Val Leu Thr Leu Ala Glu Ile Gly Val Glu Ser Asp Glu Val Gly Leu  
210 215 220

Ala Asn Ala Gly Ser Thr Val Leu Ala Ser Thr Pro Lys Pro Ala Lys  
225 230 235 240



Thr Ala Gly Glu Lys Val Thr Asp Glu Gly Glu Gly Gly Asn Gln Ile  
245 250 255

Val Gln Tyr Leu Val Ala Gln Lys Ile Ile  
260 265

<210> 154

<211> 25

<212> DNA

<213> Mycobacterium tuberculosis

<400> 154

ctgagatcta tgaacctacg gcgcc 25

<210> 155

<211> 35

<212> DNA

<213> Mycobacterium tuberculosis

<400> 155

ctcccatggt accctaggac ccgggcagcc ccggc 35

<210> 156

<211> 29

<212> DNA

<213> Mycobacterium tuberculosis

<400> 156

ctgagatcta tgaggctgtc gttgaccgc 29

<210> 157

<211> 30

<212> DNA

<213> Mycobacterium tuberculosis

<400> 157

ctccccgggc ttaatagttg ttgcaggagc 30

<210> 158

<211> 33

<212> DNA

<213> Mycobacterium tuberculosis

<400> 158

gcttagatct atgattttct gggcaaccag gta 33

<210> 159

<211> 30  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 159  
 gcttccatgg gcgaggcaca ggcgtgggaa 30

<210> 160  
 <211> 30  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 160  
 ctgagatcta gaatgccaca gggaaactgtg 30

<210> 161  
 <211> 30  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 161  
 tctcccgggg gtaactcaga gcgagcggac 30

<210> 162  
 <211> 27  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 162  
 ctgagatcta tgaacgtcac cgtatcc 27

<210> 163  
 <211> 27  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 163  
 tctcccgggg ctcacccacc ggccacg 27

<210> 164  
 <211> 30  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 164  
 ctgagatcta tggcaacacg ttttatgacg 30

<210> 165

<210> 170  
 <211> 15  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<220>  
 <221> VARIANT  
 <222> (1)  
 <223> Thr could also be Ala

<400> 170  
 Thr Arg Phe Met Thr Asp Pro His Ala Met Arg Asp Met Ala Gly  
 1 5 10 15

<210> 171  
 <211> 15  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 171  
 Pro Lys Arg Ser Glu Tyr Arg Gln Gly Thr Pro Asn Trp Val Asp  
 1 5 10 15

<210> 172  
 <211> 404  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 172  
 Met Ala Thr Val Asn Arg Ser Arg His His His His His His His  
 1 5 10 15

Ile Glu Gly Arg Ser Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu  
 20 25 30

Gln Val Pro Ser Pro Ser Met Gly Arg Asp Ile Lys Val Gln Phe Gln  
 35 40 45

Ser Gly Gly Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp Gly Leu Arg  
 50 55 60

Ala Gln Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr Pro Ala Phe Glu  
 65 70 75 80

Trp Tyr Tyr Gln Ser Gly Leu Ser Ile Val Met Pro Val Gly Gly Gln  
 85 90 95

Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro Ala Cys Gly Lys Ala Gly  
 100 105 110

Cys Gln Thr Tyr Lys Trp Glu Thr Phe Leu Thr Ser Glu Leu Pro Gln  
 115 120 125

Trp Leu Ser Ala Asn Arg Ala Val Lys Pro Thr Gly Ser Ala Ala Ile  
 130 135 140

Gly Leu Ser Met Ala Gly Ser Ser Ala Met Ile Leu Ala Ala Tyr His  
 145 150 155 160

Pro Gln Gln Phe Ile Tyr Ala Gly Ser Leu Ser Ala Leu Leu Asp Pro  
 165 170 175

Ser Gln Gly Met Gly Pro Ser Leu Ile Gly Leu Ala Met Gly Asp Ala  
 180 185 190

Gly Gly Tyr Lys Ala Ala Asp Met Trp Gly Pro Ser Ser Asp Pro Ala  
 195 200 205

Trp Glu Arg Asn Asp Pro Thr Gln Gln Ile Pro Lys Leu Val Ala Asn  
 210 215 220

Asn Thr Arg Leu Trp Val Tyr Cys Gly Asn Gly Thr Pro Asn Glu Leu  
 225 230 235 240

Gly Gly Ala Asn Ile Pro Ala Glu Phe Leu Glu Asn Phe Val Arg Ser  
 245 250 255

Ser Asn Leu Lys Phe Gln Asp Ala Tyr Asn Ala Ala Gly Gly His Asn  
 260 265 270

Ala Val Phe Asn Phe Pro Pro Asn Gly Thr His Ser Trp Glu Tyr Trp  
 275 280 285

Gly Ala Gln Leu Asn Ala Met Lys Gly Asp Leu Gln Ser Ser Leu Gly  
 290 295 300

Ala Gly Lys Leu Ala Met Thr Glu Gln Gln Trp Asn Phe Ala Gly Ile  
 305 310 315 320

Glu Ala Ala Ala Ser Ala Ile Gln Gly Asn Val Thr Ser Ile His Ser  
 325 330 335

Leu Leu Asp Glu Gly Lys Gln Ser Leu Thr Lys Leu Ala Ala Ala Trp  
 340 345 350

145		150		155		160									
Arg	Ala	Gln	Asp	Asp	Tyr	Asn	Gly	Trp	Asp	Ile	Asn	Thr	Pro	Ala	Phe
			165						170					175	
Glu	Trp	Tyr	Tyr	Gln	Ser	Gly	Leu	Ser	Ile	Val	Met	Pro	Val	Gly	Gly
			180					185					190		
Gln	Ser	Ser	Phe	Tyr	Ser	Asp	Trp	Tyr	Ser	Pro	Ala	Cys	Gly	Lys	Ala
		195					200					205			
Gly	Cys	Gln	Thr	Tyr	Lys	Trp	Glu	Thr	Phe	Leu	Thr	Ser	Glu	Leu	Pro
	210					215					220				
Gln	Trp	Leu	Ser	Ala	Asn	Arg	Ala	Val	Lys	Pro	Thr	Gly	Ser	Ala	Ala
225					230					235				240	
Ile	Gly	Leu	Ser	Met	Ala	Gly	Ser	Ser	Ala	Met	Ile	Leu	Ala	Ala	Tyr
				245					250					255	
His	Pro	Gln	Gln	Phe	Ile	Tyr	Ala	Gly	Ser	Leu	Ser	Ala	Leu	Leu	Asp
			260					265					270		
Pro	Ser	Gln	Gly	Met	Gly	Pro	Ser	Leu	Ile	Gly	Leu	Ala	Met	Gly	Asp
		275					280					285			
Ala	Gly	Gly	Tyr	Lys	Ala	Ala	Asp	Met	Trp	Gly	Pro	Ser	Ser	Asp	Pro
		290				295					300				
Ala	Trp	Glu	Arg	Asn	Asp	Pro	Thr	Gln	Gln	Ile	Pro	Lys	Leu	Val	Ala
305				310						315				320	
Asn	Asn	Thr	Arg	Leu	Trp	Val	Tyr	Cys	Gly	Asn	Gly	Thr	Pro	Asn	Glu
			325						330					335	
Leu	Gly	Gly	Ala	Asn	Ile	Pro	Ala	Glu	Phe	Leu	Glu	Asn	Phe	Val	Arg
			340					345					350		
Ser	Ser	Asn	Leu	Lys	Phe	Gln	Asp	Ala	Tyr	Asn	Ala	Ala	Gly	Gly	His
		355					360					365			
Asn	Ala	Val	Phe	Asn	Phe	Pro	Pro	Asn	Gly	Thr	His	Ser	Trp	Glu	Tyr
		370				375					380				
Trp	Gly	Ala	Gln	Leu	Asn	Ala	Met	Lys	Gly	Asp	Leu	Gln	Ser	Ser	Leu
385				390						395				400	
Gly	Ala	Gly													

<210> 174  
 <211> 291  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 174  
 atgtcgcaga ttatgtacaa ctatccggcg atgatggctc atgccgggga catggccggt 60  
 tatgcgggca cgctgcagag cttggggggc gatatcgcca gtgagcaggc cgtgctgtcc 120  
 agtgcttggc agggtgatac cgggatcacg tatcagggct ggcagacca gtggaaccag 180  
 gccctagagg atctggtgcg ggcctatcag tcgatgtctg gcacccatga gtccaacacc 240  
 atggcgatgt tggctcgaga tggggccgaa gccgccaagt ggggcggcta g 291

<210> 175  
 <211> 96  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 175  
 Met Ser Gln Ile Met Tyr Asn Tyr Pro Ala Met Met Ala His Ala Gly  
 1 5 10 15  
 Asp Met Ala Gly Tyr Ala Gly Thr Leu Gln Ser Leu Gly Ala Asp Ile  
 20 25 30  
 Ala Ser Glu Gln Ala Val Leu Ser Ser Ala Trp Gln Gly Asp Thr Gly  
 35 40 45  
 Ile Thr Tyr Gln Gly Trp Gln Thr Gln Trp Asn Gln Ala Leu Glu Asp  
 50 55 60  
 Leu Val Arg Ala Tyr Gln Ser Met Ser Gly Thr His Glu Ser Asn Thr  
 65 70 75 80  
 Met Ala Met Leu Ala Arg Asp Gly Ala Glu Ala Ala Lys Trp Gly Gly  
 85 90 95

<210> 176  
 <211> 363  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 176

gtgtcgcaga gtatgtacag ctaccggcg atgacggcca atgtcggaga catggccggt 60  
tatacgggca cgacgcagag cttgggggcc gatatcgcca gtgagcgcac cgcgccgtcg 120  
cgtgcttgcc aaggtgatct cgggatgagt catcaggact ggcaggccca gtggaatcag 180  
gccatggagg ctctcgcgcg ggcctaccgt cggtgccggc gagcactacg ccagatcggg 240  
gtgctggaaa ggccggtagg cgattcgtca gactgcggaa cgattagggg ggggtcgttc 300  
cggggtcggt ggctggaccc gcgccatgcg ggtccagcca cggccgccga cgccggagac 360  
taa 363

<210> 177

<211> 120

<212> PRT

<213> Mycobacterium tuberculosis

<400> 177

Met Ser Gln Ser Met Tyr Ser Tyr Pro Ala Met Thr Ala Asn Val Gly  
1 5 10 15  
Asp Met Ala Gly Tyr Thr Gly Thr Thr Gln Ser Leu Gly Ala Asp Ile  
20 25 30  
Ala Ser Glu Arg Thr Ala Pro Ser Arg Ala Cys Gln Gly Asp Leu Gly  
35 40 45  
Met Ser His Gln Asp Trp Gln Ala Gln Trp Asn Gln Ala Met Glu Ala  
50 55 60  
Leu Ala Arg Ala Tyr Arg Arg Cys Arg Arg Ala Leu Arg Gln Ile Gly  
65 70 75 80  
Val Leu Glu Arg Pro Val Gly Asp Ser Ser Asp Cys Gly Thr Ile Arg  
85 90 95  
Val Gly Ser Phe Arg Gly Arg Trp Leu Asp Pro Arg His Ala Gly Pro  
100 105 110  
Ala Thr Ala Ala Asp Ala Gly Asp  
115 120

<210> 178

<211> 297

<212> DNA

<213> Mycobacterium tuberculosis

<400> 178

atggcctcgc gttttatgac ggatccgcac gcgatgcggg acatggcggg ccgttttgag 60  
gtgcacgccc agacggtgga ggacgaggct cgccggatgt gggcgctccg gcaaaacatc 120

tctgggcgcgg gctggagtgg catggccgag gcgacctcgc tagacaccat gacccagatg 180  
aatcaggcgt ttcgcaacat cgtgaacatg ctgcacgggg tgcgtgacgg gctggttcgc 240  
gacgccaaca actacgaaca gcaagagcag gcctcccagc agatcctcag cagctga 297

<210> 179

<211> 98

<212> PRT

<213> Mycobacterium tuberculosis

<400> 179

Met Ala Ser Arg Phe Met Thr Asp Pro His Ala Met Arg Asp Met Ala  
1 5 10 15

Gly Arg Phe Glu Val His Ala Gln Thr Val Glu Asp Glu Ala Arg Arg  
20 25 30

Met Trp Ala Ser Ala Gln Asn Ile Ser Gly Ala Gly Trp Ser Gly Met  
35 40 45

Ala Glu Ala Thr Ser Leu Asp Thr Met Thr Gln Met Asn Gln Ala Phe  
50 55 60

Arg Asn Ile Val Asn Met Leu His Gly Val Arg Asp Gly Leu Val Arg  
65 70 75 80

Asp Ala Asn Asn Tyr Glu Gln Gln Glu Gln Ala Ser Gln Gln Ile Leu  
85 90 95

Ser Ser

<210> 180

<211> 297

<212> DNA

<213> Mycobacterium tuberculosis

<400> 180

atggcctcac gttttatgac ggatccgcac gcgatgcggg acatggcggg ccgttttgag 60  
gtgcacgccc agacggtgga ggacgaggct cgccggatgt gggcgteccgc gcaaaacatt 120  
tccggtgcgg gctggagtgg catggccgag gcgacctcgc tagacaccat ggcccagatg 180  
aatcaggcgt ttcgcaacat cgtgaacatg ctgcacgggg tgcgtgacgg gctggttcgc 240  
gacgccaaca actacgagca gcaagagcag gcctcccagc agatcctcag cagctaa 297

<210> 181

<211> 98

<212> PRT

<213> Mycobacterium tuberculosis



<400> 181

Met Ala Ser Arg Phe Met Thr Asp Pro His Ala Met Arg Asp Met Ala  
1 5 10 15

Gly Arg Phe Glu Val His Ala Gln Thr Val Glu Asp Glu Ala Arg Arg  
20 25 30

Met Trp Ala Ser Ala Gln Asn Ile Ser Gly Ala Gly Trp Ser Gly Met  
35 40 45

Ala Glu Ala Thr Ser Leu Asp Thr Met Ala Gln Met Asn Gln Ala Phe  
50 55 60

Arg Asn Ile Val Asn Met Leu His Gly Val Arg Asp Gly Leu Val Arg  
65 70 75 80

Asp Ala Asn Asn Tyr Glu Gln Gln Glu Gln Ala Ser Gln Gln Ile Leu  
85 90 95

Ser Ser

<210> 182

<211> 297

<212> DNA

<213> Mycobacterium tuberculosis

<400> 182

atggcctcac gttttatgac ggatccgcat gcgatgcggg acatggcggg ccgttttgag 60  
gtgcacgccc agacggtgga ggacgaggct cgccggatgt gggcgctcgc gcaaaacatt 120  
tccggtgcgg gctggagtgg catggccgag gcgacctcgc tagacaccat gacctagatg 180  
aatcaggcgt ttcgcaacat cgtgaacatg ctgcacgggg tgcgtgacgg gctggttcgc 240  
gacgccaaca actacgaaca gcaagagcag gcctcccagc agatcctgag cagctag 297

<210> 183

<211> 98

<212> PRT

<213> Mycobacterium tuberculosis

<400> 183

Met Ala Ser Arg Phe Met Thr Asp Pro His Ala Met Arg Asp Met Ala  
1 5 10 15

Gly Arg Phe Glu Val His Ala Gln Thr Val Glu Asp Glu Ala Arg Arg  
20 25 30

Met Trp Ala Ser Ala Gln Asn Ile Ser Gly Ala Gly Trp Ser Gly Met  
 35 40 45

Ala Glu Ala Thr Ser Leu Asp Thr Met Thr Gln Met Asn Gln Ala Phe  
 50 55 60

Arg Asn Ile Val Asn Met Leu His Gly Val Arg Asp Gly Leu Val Arg  
 65 70 75 80

Asp Ala Asn Asn Tyr Glu Gln Gln Glu Gln Ala Ser Gln Gln Ile Leu  
 85 90 95

Ser Ser

<210> 184

<211> 297

<212> DNA

<213> Mycobacterium tuberculosis

<400> 184

atgacctcgc gttttatgac ggatccgcac gcgatgcggg acatggcggg ccgttttgag 60  
 gtgcacgccc agacggtgga ggacgaggct cgccggatgt gggcgtccgc gcaaaacatt 120  
 tccggcgcg gctggagtgg catggccgag gcgacctcgc tagacaccat gacccagatg 180  
 aatcaggcgt ttcgcaacat cgtgaacatg ctgcacgggg tgcgtgacgg gctgggttcgc 240  
 gacgccaaca actacgaaca gcaagagcag gctcccagc agatcctcag cagctga 297

<210> 185

<211> 98

<212> PRT

<213> Mycobacterium tuberculosis

<400> 185

Met Thr Ser Arg Phe Met Thr Asp Pro His Ala Met Arg Asp Met Ala  
 1 5 10 15

Gly Arg Phe Glu Val His Ala Gln Thr Val Glu Asp Glu Ala Arg Arg  
 20 25 30

Met Trp Ala Ser Ala Gln Asn Ile Ser Gly Ala Gly Trp Ser Gly Met  
 35 40 45

Ala Glu Ala Thr Ser Leu Asp Thr Met Thr Gln Met Asn Gln Ala Phe  
 50 55 60

Arg Asn Ile Val Asn Met Leu His Gly Val Arg Asp Gly Leu Val Arg  
 65 70 75 80

Asp Ala Asn Asn Tyr Glu Gln Gln Glu Gln Ala Ser Gln Gln Ile Leu  
85 90 95

Ser Ser

<210> 186  
<211> 20  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 186  
ggaatgaaaa ggggtttgtg 20

<210> 187  
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<213> Mycobacterium tuberculosis

<400> 187  
gaccacgccc gcgcctgtg 20

<210> 188  
<211> 27  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 188  
gcaacacccg ggatgtcgca gattatg 27

<210> 189  
<211> 30  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 189  
ctaagcttgg atccctagcc gcccacttg 30

<210> 190  
<211> 22  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 190  
gaatatttga aagggttcg tg 22

<210> 191  
<211> 30  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 191  
ctactaagct tggatcctta gtctccggcg 30

<210> 192  
<211> 27  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 192  
gcaacacccg ggggtgctcgca gagtatg 27

<210> 193  
<211> 30  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 193  
ctactaagct tggatcctta gtctccggcg 30

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 5 <120> M. tuberculosis antigens  
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 10 <160> 64  
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 Met Ser Gln Ile Met Tyr Asn Tyr  
 1 5  
 30 ccc gcg atg ttg ggt cac gcc ggg gat atg gcc gga tat gcc ggc acg 162  
 Pro Ala Met Leu Gly His Ala Gly Asp Met Ala Gly Tyr Ala Gly Thr  
 10 15 20  
 35 ctg cag agc ttg ggt gcc gag atc gcc gtg gag cag gcc gcg ttg cag 210  
 Leu Gln Ser Leu Gly Ala Glu Ile Ala Val Glu Gln Ala Ala Leu Gln  
 25 30 35 40  
 40 agt gcg tgg cag ggc gat acc ggg atc acg tat cag gcg tgg cag gca 258  
 Ser Ala Trp Gln Gly Asp Thr Gly Ile Thr Tyr Gln Ala Trp Gln Ala  
 45 50 55  
 45 cag tgg aac cag gcc atg gaa gat ttg gtg cgg gcc tat cat gcg atg 306  
 Gln Trp Asn Gln Ala Met Glu Asp Leu Val Arg Ala Tyr His Ala Met  
 60 65 70  
 50 tcc agc acc cat gaa gcc aac acc atg gcg atg atg gcc cgc gac acc 354  
 Ser Ser Thr His Glu Ala Asn Thr Met Ala Met Met Ala Arg Asp Thr  
 75 80 85  
 gcc gaa gcc gcc aaa tgg ggc ggc tag 381  
 50 Ala Glu Ala Ala Lys Trp Gly Gly  
 90 95  
 55 <210> 195  
 <211> 96  
 <212> PRT

204

&lt;213&gt; Mycobacterium

tuberculosis

&lt;400&gt; 195

5 Met Ser Gln Ile Met Tyr Asn Tyr Pro Ala Met Leu Gly His Ala Gly  
 1 5 10 15  
 Asp Met Ala Gly Tyr Ala Gly Thr Leu Gln Ser Leu Gly Ala Glu Ile  
 20 25 30  
 Ala Val Glu Gln Ala Ala Leu Gln Ser Ala Trp Gln Gly Asp Thr Gly  
 35 40 45  
 10 Ile Thr Tyr Gln Ala Trp Gln Ala Gln Trp Asn Gln Ala Met Glu Asp  
 50 55 60  
 Leu Val Arg Ala Tyr His Ala Met Ser Ser Thr His Glu Ala Asn Thr  
 65 70 75 80  
 Met Ala Met Met Ala Arg Asp Thr Ala Glu Ala Ala Lys Trp Gly Gly  
 15 85 90 95

&lt;210&gt; 196

&lt;211&gt; 363

&lt;212&gt; DNA

20 &lt;213&gt; Mycobacterium tuberculosis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)...(360)

25

&lt;400&gt; 196

gtg tgc cag agt atg tac agc tac ccg gcg atg acg gcc aat gtc gga 48  
 Met Ser Gln Ser Met Tyr Ser Tyr Pro Ala Met Thr Ala Asn Val Gly  
 1 5 10 15  
 30 gac atg gcc ggt tat acg ggc acg acg cag agc ttg ggg gcc gat atc 96  
 Asp Met Ala Gly Tyr Thr Gly Thr Thr Gln Ser Leu Gly Ala Asp Ile  
 20 25 30  
 35 gcc agt gag cgc acc gcg ccg tgc cgt gct tgc caa ggt gat ctc ggg 144  
 Ala Ser Glu Arg Thr Ala Pro Ser Arg Ala Cys Gln Gly Asp Leu Gly  
 35 40 45  
 40 atg agt cat cag gac tgg cag gcc cag tgg aat cag gcc atg gag gct 192  
 Met Ser His Gln Asp Trp Gln Ala Gln Trp Asn Gln Ala Met Glu Ala  
 50 55 60  
 ctc gcg ccg gcc tac cgt ccg tgc ccg cga gca cta cgc cag atc ggg 240  
 Leu Ala Arg Ala Tyr Arg Arg Cys Arg Arg Ala Leu Arg Gln Ile Gly  
 45 65 70 75 80  
 gtg ctg gaa agg ccg gta ggc gat tgc tca gac tgc gga acg att agg 288  
 Val Leu Glu Arg Pro Val Gly Asp Ser Ser Asp Cys Gly Thr Ile Arg  
 85 90 95  
 50 gtg ggg tgc ttc ccg ggt ccg tgg ctg gac ccg cgc cat gcg ggt cca 336  
 Val Gly Ser Phe Arg Gly Arg Trp Leu Asp Pro Arg His Ala Gly Pro  
 100 105 110  
 55 gcc acg gcc gcc gac gcc gga gac taa 363  
 Ala Thr Ala Ala Asp Ala Gly Asp

115

120

5 <210> 197  
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 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 197

10 Met Ser Gln Ser Met Tyr Ser Tyr Pro Ala Met Thr Ala Asn Val Gly  
 1 5 10 15  
 Asp Met Ala Gly Tyr Thr Gly Thr Thr Gln Ser Leu Gly Ala Asp Ile  
 20 25 30  
 Ala Ser Glu Arg Thr Ala Pro Ser Arg Ala Cys Gln Gly Asp Leu Gly  
 35 40 45

15 Met Ser His Gln Asp Trp Gln Ala Gln Trp Asn Gln Ala Met Glu Ala  
 50 55 60  
 Leu Ala Arg Ala Tyr Arg Arg Cys Arg Arg Ala Leu Arg Gln Ile Gly  
 65 70 75 80

20 Val Leu Glu Arg Pro Val Gly Asp Ser Ser Asp Cys Gly Thr Ile Arg  
 85 90 95  
 Val Gly Ser Phe Arg Gly Arg Trp Leu Asp Pro Arg His Ala Gly Pro  
 100 105 110  
 Ala Thr Ala Ala Asp Ala Gly Asp  
 115 120

25 <210> 198  
 <211> 291  
 <212> DNA  
 <213> Mycobacterium tuberculosis

30 <220>  
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 <222> (1)...(288)

35 <400> 198

atg tcg cag att atg tac aac tat ccg gcg atg atg gct cat gcc ggg 48  
 Met Ser Gln Ile Met Tyr Asn Tyr Pro Ala Met Met Ala His Ala Gly  
 1 5 10 15

40 gac atg gcc ggt tat gcg ggc acg ctg cag agc ttg ggg gcc gat atc 96  
 Asp Met Ala Gly Tyr Ala Gly Thr Leu Gln Ser Leu Gly Ala Asp Ile  
 20 25 30

45 gcc agt gag cag gcc gtg ctg tcc agt gct tgg cag ggt gat acc ggg 144  
 Ala Ser Glu Gln Ala Val Leu Ser Ser Ala Trp Gln Gly Asp Thr Gly  
 35 40 45

50 atc acg tat cag ggc tgg cag acc cag tgg aac cag gcc cta gag gat 192  
 Ile Thr Tyr Gln Gly Trp Gln Thr Gln Trp Asn Gln Ala Leu Glu Asp  
 50 55 60

55 ctg gtg cgg gcc tat cag tcg atg tct ggc acc cat gag tcc aac acc 240  
 Leu Val Arg Ala Tyr Gln Ser Met Ser Gly Thr His Glu Ser Asn Thr  
 65 70 75 80

86

atg gcg atg ttg gct cga gat ggg gcc gaa gcc gcc aag tgg ggc ggc 288  
Met Ala Met Leu Ala Arg Asp Gly Ala Glu Ala Ala Lys Trp Gly Gly  
85 90 95

5 tag 291

<210> 199  
<211> 96  
<212> PRT

10 <213> Mycobacterium tuberculosis

<400> 199

Met Ser Gln Ile Met Tyr Asn Tyr Pro Ala Met Met Ala His Ala Gly  
1 5 10 15  
15 Asp Met Ala Gly Tyr Ala Gly Thr Leu Gln Ser Leu Gly Ala Asp Ile  
20 25 30  
Ala Ser Glu Gln Ala Val Leu Ser Ser Ala Trp Gln Gly Asp Thr Gly  
35 40 45  
20 Ile Thr Tyr Gln Gly Trp Gln Thr Gln Trp Asn Gln Ala Leu Glu Asp  
50 55 60  
Leu Val Arg Ala Tyr Gln Ser Met Ser Gly Thr His Glu Ser Asn Thr  
65 70 75 80  
Met Ala Met Leu Ala Arg Asp Gly Ala Glu Ala Ala Lys Trp Gly Gly  
85 90 95

25

<210> 200  
<211> 60  
<212> DNA

30 <213> Mycobacterium tuberculosis

<220>  
<221> CDS  
<222> (1)...(60)

35

<400> 200

atg tcg cag att atg tac aac tat ccg gcg atg atg gct cat gcc ggg 48  
Met Ser Gln Ile Met Tyr Asn Tyr Pro Ala Met Met Ala His Ala Gly  
1 5 10 15

40

gac atg gcc ggt 60  
Asp Met Ala Gly  
20

45

<210> 201  
<211> 20  
<212> PRT

50 <213> Mycobacterium tuberculosis

<400> 201

Met Ser Gln Ile Met Tyr Asn Tyr Pro Ala Met Met Ala His Ala Gly  
1 5 10 15  
55 Asp Met Ala Gly  
20



287

<210> 202  
 <211> 60  
 <212> DNA  
 <213> Mycobacterium tuberculosis  
 5  
 <220>  
 <221> CDS  
 <222> (1)...(60)  
 10  
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 atg atg gct cat gcc ggg gac atg gcc ggt tat gcg ggc acg ctg cag 48  
 Met Met Ala His Ala Gly Asp Met Ala Gly Tyr Ala Gly Thr Leu Gln  
 1 5 10 15  
 15 agc ttg ggg gcc 60  
 Ser Leu Gly Ala  
 20  
 20  
 <210> 203  
 <211> 20  
 <212> PRT  
 <213> Mycobacterium tuberculosis  
 25  
 <400> 203  
 Met Met Ala His Ala Gly Asp Met Ala Gly Tyr Ala Gly Thr Leu Gln  
 1 5 10 15  
 Ser Leu Gly Ala  
 20  
 30  
 <210> 204  
 <211> 60  
 <212> DNA  
 <213> Mycobacterium tuberculosis  
 35  
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 <221> CDS  
 <222> (1)...(60)  
 40  
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 tat gcg ggc acg ctg cag agc ttg ggg gcc gat atc gcc agt gag cag 48  
 Tyr Ala Gly Thr Leu Gln Ser Leu Gly Ala Asp Ile Ala Ser Glu Gln  
 1 5 10 15  
 45 gcc gtg ctg tcc 60  
 Ala Val Leu Ser  
 20  
 50  
 <210> 205  
 <211> 20  
 <212> PRT  
 <213> Mycobacterium tuberculosis  
 55  
 <400> 205  
 Tyr Ala Gly Thr Leu Gln Ser Leu Gly Ala Asp Ile Ala Ser Glu Gln

1	5	10	15
Ala Val Leu Ser			
20			

```
5      <210> 206
      <211> 60
      <212> DNA
      <213> Mycobacterium tuberculosis
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```
10      <220>
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      <222> (1) . . . (60)
```

15                   <400> 206  
gat atc gcc agt gag cag gcc gtg ctg tcc agt gct tgg cag ggt gat                   48  
Asp Ile Ala Ser Glu Gln Ala Val Leu Ser Ser Ala Trp Gln Gly Asp  
                  1                  5                  10                  15

acc ggg atc acg  
20 Thr Gly Ile Thr 60

20

```

25      <210> 207
      <211> 20
      <212> PRT
      <213> Mycobacterium tuberculosis

```

```

30      <400> 207
   Asp Ile Ala Ser Glu Gln Ala Val Leu Ser Ser Ala Trp Gln Gly Asp
     1             5             10             15
   Thr Gly Ile Thr
           20

```

```
35      <210> 208
      <211> 60
      <212> DNA
      <213> Mycobacterium tuberculosis
```

```

40      <220>
      <221> CDS
      <222> (1) ... (60)

```

45                   <400> 208  
agt gct tgg cag ggt gat acc ggg atc acg tat cag ggc tgg cag acc                   48  
Ser Ala Trp Gln Gly Asp Thr Gly Ile Thr Tyr Gln Gly Trp Gln Thr  
          1                          5                          10                          15

50      cag tgg aac cag      60  
         Gln Trp Asn Gln  
                 20

```

55      <210> 209
      <211> 20
      <212> PRT

```

289

<213> Mycobacterium tuberculosis

<400> 209

5 Ser Ala Trp Gln Gly Asp Thr Gly Ile Thr Tyr Gln Gly Trp Gln Thr  
1 5 10 15  
Gln Trp Asn Gln  
20

<210> 210

10 <211> 60

<212> DNA

<213> Mycobacterium tuberculosis

<220>

15 <221> CDS

<222> (1)...(60)

<400> 210

20 tat cag ggc tgg cag acc cag tgg aac cag gcc cta gag gat ctg gtg 48  
Tyr Gln Gly Trp Gln Thr Gln Trp Asn Gln Ala Leu Glu Asp Leu Val  
1 5 10 15

25 cgg gcc tat cag 60  
Arg Ala Tyr Gln  
20

<210> 211

30 <211> 20

<212> PRT

<213> Mycobacterium tuberculosis

<400> 211

35 Tyr Gln Gly Trp Gln Thr Gln Trp Asn Gln Ala Leu Glu Asp Leu Val  
1 5 10 15  
Arg Ala Tyr Gln  
20

<210> 212

40 <211> 60

<212> DNA

<213> Mycobacterium tuberculosis

<220>

45 <221> CDS

<222> (1)...(60)

<400> 212

50 gcc cta gag gat ctg gtg cgg gcc tat cag tcg atg tct ggc acc cat 48  
Ala Leu Glu Asp Leu Val Arg Ala Tyr Gln Ser Met Ser Gly Thr His  
1 5 10 15

55 gag tcc aac acc 60  
Glu Ser Asn Thr  
20

```
<210> 213
<211> 20
<212> PRT
<213> Mycobacterium tuberculosis
```

```

      <400> 213
      Ala Leu Glu Asp Leu Val Arg Ala Tyr Gln Ser Met Ser Gly Thr His
      1      5      10      15
10  Glu Ser Asn Thr
      20

```

```

15      <210> 214
        <211> 60
        <212> DNA
        <213> Mycobacterium tuberculosis

        <220>
20      <221> CDS
        <222> (1) ... (60)

```

<400> 214  
 tcg atg tct ggc acc cat gag tcc aac acc atg gcg atg ttg gct cga 48  
 Ser Met Ser Gly Thr His Glu Ser Asn Thr Met Ala Met Leu Ala Arg  
 25        1                        5                        10                        15

gat ggg gcc gaa 60  
Asp Gly Ala Glu  
20  
30

```

35      <210> 215
      <211> 20
      <212> PRT
      <213> Mycobacterium tuberculosis

```

```

          <400> 215
      Ser Met Ser Gly Thr His Glu Ser Asn Thr Met Ala Met Leu Ala Arg
        1           5           10           15
40  Asp Gly Ala Glu
           20

```

```

45      <210> 216
      <211> 48
      <212> DNA
      <213> Mycobacterium tuberculosis

```

```

50      <220>
      <221> CDS
      <222> (1) . . . (48)

```

<400> 216  
 atg gcg atg ttg gct cga gat ggg gcc gaa gcc gcc aag tgg ggc ggc 48  
 Met Ala Met Leu Ala Arg Asp Gly Ala Glu Ala Ala Lys Trp Gly Gly  
 55 1 5 10 15

5      <210> 217  
      <211> 16  
      <212> PRT  
      <213> Mycobacterium tuberculosis

     <400> 217  
 Met Ala Met Leu Ala Arg Asp Gly Ala Glu Ala Ala Lys Trp Gly Gly  
     1                    5                    10                    15

10      <210> 218  
      <211> 54  
      <212> DNA  
      <213> Mycobacterium tuberculosis

15      <220>  
      <221> CDS  
      <222> (1)...(54)

20      <400> 218  
 atg tgc caa atc atg tac aac tac ccc gcg atg ttg ggt cac gcc ggg      48  
 Met Ser Gln Ile Met Tyr Asn Tyr Pro Ala Met Leu Gly His Ala Gly  
     1                    5                    10                    15

25      gat atg      54  
      Asp Met

30      <210> 219  
      <211> 18  
      <212> PRT  
      <213> Mycobacterium tuberculosis

35      <400> 219  
 Met Ser Gln Ile Met Tyr Asn Tyr Pro Ala Met Leu Gly His Ala Gly  
     1                    5                    10                    15  
 Asp Met

40      <210> 220  
      <211> 54  
      <212> DNA  
      <213> Mycobacterium tuberculosis

45      <220>  
      <221> CDS  
      <222> (1)...(54)

50      <400> 220  
 atg ttg ggt cac gcc ggg gat atg gcc gga tat gcc ggc acg ctg cag      48  
 Met Leu Gly His Ala Gly Asp Met Ala Gly Tyr Ala Gly Thr Leu Gln  
     1                    5                    10                    15

55      agc ttg      54  
      Ser Leu

```

10 Met Leu Gly His Ala Gly Asp Met Ala Gly Tyr Ala Gly Thr Leu Gln
    1          5          10          15
    Ser Leu

```

```

20      <220>
      <221> CDS
      <222> (1) . . . (54)

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gcc gcg 54  
30 Ala Ala

<400> 223  
 40 Tyr Ala Gly Thr Leu Gln Ser Leu Gly Ala Glu Ile Ala Val Glu Gln  
     1                    5                    10                    15  
     Ala Ala

```

50      <220>
      <221> CDS
      <222> (1) . . . (54)

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55                   <400> 224  
gag atc gcc gtg gag cag gcc gcg ttg cag agt gcg tgg cag ggc gat                   48  
Glu Ile Ala Val Glu Gln Ala Ala Leu Gln Ser Ala Trp Gln Gly Asp

93

1	5	10	15	
5				acc ggg Thr Gly
				54
10				<210> 225 <211> 18 <212> PRT <213> Mycobacterium tuberculosis
				<400> 225
15				Glu Ile Ala Val Glu Gln Ala Ala Leu Gln Ser Ala Trp Gln Gly Asp 1 5 10 15 Thr Gly
20				<210> 226 <211> 54 <212> DNA <213> Mycobacterium tuberculosis
25				<220> <221> CDS <222> (1)...(54) <223>
30				
35				<400> 226 agt gcg tgg cag ggc gat acc ggg atc acg tat cag gcg tgg cag gca Ser Ala Trp Gln Gly Asp Thr Gly Ile Thr Tyr Gln Ala Trp Gln Ala 1 5 10 15
				48
40				cag tgg Gln Trp
				54
45				<210> 227 <211> 18 <212> PRT <213> Mycobacterium tuberculosis
				<400> 227
50				Ser Ala Trp Gln Gly Asp Thr Gly Ile Thr Tyr Gln Ala Trp Gln Ala 1 5 10 15 Gln Trp
55				<210> 228 <211> 51

1294

<212> DNA  
<213> Mycobacterium tuberculosis

5 <220>  
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<223>

10

<400> 228  
tat cag gcg tgg cag gca cag tgg aac cag gcc atg gaa gat ttg gtg 48  
15 Tyr Gln Ala Trp Gln Ala Gln Trp Asn Gln Ala Met Glu Asp Leu Val  
1 5 10 15

cgg 51  
Arg  
20

<210> 229  
<211> 17  
25 <212> PRT  
<213> Mycobacterium tuberculosis

<400> 229  
Tyr Gln Ala Trp Gln Ala Gln Trp Asn Gln Ala Met Glu Asp Leu Val  
30 1 5 10 15  
Arg

<210> 230  
35 <211> 54  
<212> DNA  
<213> Mycobacterium tuberculosis

40 <220>  
<221> CDS  
<222> (1)...(54)

<400> 230  
gcc atg gaa gat ttg gtg cgg gcc tat cat gcg atg tcc agc acc cat 48  
45 Ala Met Glu Asp Leu Val Arg Ala Tyr His Ala Met Ser Ser Thr His  
1 5 10 15

gaa gcc 54  
Glu Ala  
50

<210> 231  
55 <211> 18  
<212> PRT  
<213> Mycobacterium tuberculosis



<400> 231  
 Ala Met Glu Asp Leu Val Arg Ala Tyr His Ala Met Ser Ser Thr His  
 1 5 10 15  
 5 Glu Ala

<210> 232  
 <211> 54  
 10 <212> DNA  
 <213> Mycobacterium tuberculosis

<220>  
 <221> CDS  
 15 <222> (1)...(54)

<400> 232  
 gcg atg tcc agc acc cat gaa gcc aac acc atg gcg atg atg gcc cgc 48  
 Ala Met Ser Ser Thr His Glu Ala Asn Thr Met Ala Met Met Ala Arg  
 20 1 5 10 15

gac acg 54  
 Asp Thr

25

<210> 233  
 <211> 18  
 <212> PRT  
 30 <213> Mycobacterium tuberculosis

<400> 233  
 Ala Met Ser Ser Thr His Glu Ala Asn Thr Met Ala Met Met Ala Arg  
 1 5 10 15  
 35 Asp Thr

<210> 234  
 <211> 48  
 40 <212> DNA  
 <213> Mycobacterium tuberculosis

<220>  
 <221> CDS  
 45 <222> (1)...(48)

<400> 234  
 atg gcg atg atg gcc cgc gac acc gcc gaa gcc gcc aaa tgg ggc ggc 48  
 Met Ala Met Met Ala Arg Asp Thr Ala Glu Ala Ala Lys Trp Gly Gly  
 50 1 5 10 15

<210> 235  
 <211> 16  
 <212> PRT  
 55 <213> Mycobacterium tuberculosis

496

<400> 235  
Met Ala Met Met Ala Arg Asp Thr Ala Glu Ala Ala Lys Trp Gly Gly  
1 5 10 15

5 <210> 236  
<211> 60  
<212> DNA  
<213> Mycobacterium tuberculosis

10 <220>  
<221> CDS  
<222> (1)...(60)

<400> 236  
15 gtg tgc cag agt atg tac agc tac ccg gcg atg acg gcc aat gtc gga 48  
Met Ser Gln Ser Met Tyr Ser Tyr Pro Ala Met Thr Ala Asn Val Gly  
1 5 10 15

20 gac atg gcc ggt 60  
Asp Met Ala Gly  
20

25 <210> 237  
<211> 20  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 237  
30 Met Ser Gln Ser Met Tyr Ser Tyr Pro Ala Met Thr Ala Asn Val Gly  
1 5 10 15  
Asp Met Ala Gly  
20

35 <210> 238  
<211> 60  
<212> DNA  
<213> Mycobacterium tuberculosis

40 <220>  
<221> CDS  
<222> (1)...(60)

<400> 238  
45 atg acg gcc aat gtc gga gac atg gcc ggt tat acg gcc acg acg cag 48  
Met Thr Ala Asn Val Gly Asp Met Ala Gly Tyr Thr Gly Thr Thr Gln  
1 5 10 15

50 agc ttg ggg gcc 60  
Ser Leu Gly Ala  
20

55 <210> 239  
<211> 20  
<212> PRT

97

<213> Mycobacterium tuberculosis

<400> 239

5 Met Thr Ala Asn Val Gly Asp Met Ala Gly Tyr Thr Gly Thr Thr Gln  
1 5 10 15  
Ser Leu Gly Ala  
20

<210> 240

10 <211> 60

<212> DNA

<213> Mycobacterium tuberculosis

<220>

15 <221> CDS

<222> (1)...(60)

<400> 240

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1 5 10 15

25 acc gcg ccg tcg 60  
Thr Ala Pro Ser  
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<210> 241

30 <211> 20

<212> PRT

<213> Mycobacterium tuberculosis

<400> 241

35 Tyr Thr Gly Thr Thr Gln Ser Leu Gly Ala Asp Ile Ala Ser Glu Arg  
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40 <211> 60

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<213> Mycobacterium tuberculosis

<220>

45 <221> CDS

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1 5 10 15

55 ctc ggg atg agt 60  
Leu Gly Met Ser  
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1298

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25    1           5           10           15

      cag tgg aat cag
      Gln Trp Asn Gln
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      1           5           10           15
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1799

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60

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Ala Met Glu Ala Leu Ala Arg Ala Tyr Arg Arg Cys Arg Arg Ala Leu  
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48

30

cgc cag atc ggg  
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60

35

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45

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18 100

cggtgc cgcga gca cta cgc cag atc ggg gtg ctg gaa agg ccg gta 48  
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1 5 10 15

5 ggc gat tcg tca 60  
Gly Asp Ser Ser  
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10 <210> 251  
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15 <400> 251  
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Gly Asp Ser Ser  
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25 <220>  
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1 5 10 15

35 gtg ggg tcg ttc 60  
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40 <210> 253  
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ccg cgc cat gcg 60  
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30 <220>  
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1 5 10 15

gac gcc gga gac 60  
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45 <210> 257  
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1 5 10 15  
Asp Ala Gly Asp  
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